Topics in Wellbeing and Adaptation to Health States

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Abstract

The present thesis consists of three chapters in applied micro-econometrics where we analyse wellbeing measurements and adaptation in different contexts. In all three chapters we investigate how wellbeing measurements are affected by different events; the latest recession, budgetary constraints imposed by government as a consequence of the recession, and patients' adaptation to health condition.

In the first chapter, co-authored with Professor Mireia Jofre-Bonet, we analyse the changes in individual wellbeing measurements in the context of the last recession. While most research includes personal characteristics and macroeconomic indicators as determinants of wellbeing, we also include sovereign ratings, as a country's tag that provides more information on how the country is performing than traditional indicators. Our results indicate that when sovereign ratings increase, individuals are more likely to report higher levels of life satisfaction. The results are confirmed in a diff-in-diff estimation, where we obtain that in those countries where ratings have been dropped after the onset of the recession, people are worse off in terms of life satisfaction. This analysis has also shown an increase in life satisfaction reported after 2010, although macroeconomic indicators remained low. We interpret this result as adaptation to harsh economic situations.

The second chapter is co-authored with Professor Mireia Jofre-Bonet, Professor Peter Ayton and Dr. Patricia Cubi-Molla. The topic of the second chapter is adaptation to health states, which is analysed in the context of individuals with amputations. We use a control group to test how differently the general public evaluates quality of life compared to patients, and what explains the difference. We find that the main determinant of the gap between the two valuations is adaptation, inferred as duration since event leading to adaptation. We also find that patients adapt as soon as within the first two years. Based on descriptive statistics, we analyse how well patients can predict their own quality of life and we obtain that those with injury-related amputations predict much closely compared to those with medical-related amputations. Finally, we assess how patients evaluate the quality of life of others with the same condition as themselves. We obtain that the longer the duration since event, the closer amputees evaluate the quality of life of themselves and that of peers.

In the third chapter, co-authored with Professor Mireia Jofre-Bonet, we analyse the effects of a government reform on the wellbeing of those affected. Specifically, we look at the wellbeing reported by disabled individuals in the context of the welfare reform started in the UK in 2013. While descriptive statistics show no change in reported wellbeing after the reform was implemented, in empirical setting we obtain that disabled individuals are worse off and more anxious. The effects are higher in disabled individuals receiving benefits who presumably, are the most affected group.

The analyses implemented in all three chapters indicate that personal characteristics explain most of the variation in wellbeing, in line with existing research. However, the results obtained here also show that macroeconomic events and government reforms affect people as well, to which they adapt ultimately.

This thesis also contributes to empirical methodologies implemented in wellbeing measurements. Most existing research estimates wellbeing with techniques that assume variables have the same effect on all categories of dichotomous variables. However, this assumption is often violated. In this thesis, we have tested the assumption and improved methodology. In our estimations, variables that do not meet this assumption have different effects on the categories of our response variables. This estimation technique allows us to observe whether certain variables determine individuals to choose higher or lower wellbeing scores at different thresholds.

Introduction

Wellbeing has been studied extensively in the last years as it seen as a more encompassing indicator reflective of how a nation is progressing, how people are affected by policies and reforms, what standard of life we have and what determines it. It has been long argued that traditional measures, such as Gross Domestic Product (GDP) or unemployment rate, are no longer sufficient to measure progress and assess differences between countries.

Wellbeing measures are not only useful in macroeconomic assessments but have implications in different fields and have already been implemented in health care evaluations. More countries are moving towards a value-base decision making on treatments included in reimbursement lists, where the main outcome of interest is the wellbeing of the patient, measured in terms of quality of life. Within this context, there is a discussion on who should assess the wellbeing, the patient or the general public, in its role of taxpayer. While currently the general public valuations are used, it has been shown that patients provide higher valuations, and, more importantly, that the general public does not account for adaptation.

We thus observe that compared to traditional indicators, individual wellbeing has a complex structure, being determined by personal characteristics, economic development, political stability, health conditions etc.; it also hard to determine how individuals will react to changes in their health or economic conditions, and to what extent these changes affect them. Although we might suspect the direction of impact, we, as individuals assessing someone's else situation, tend to focus on what would be different and not consider that the respective individual can adapt. In our current times, with a high degree of mobility and challenging economic times, analysing what makes people happy should be a priority for our governments. Political reforms, economic crisis, uncertainty are also factors that impact individuals, beyond changes in personal life, which in turn determines the standard of living of a country and its performance. Countries where people are perceived to be happy attract individuals who want to enjoy a better standard of living, while countries where there is instability, economic imbalances, corruption etc., are facing protests and disgruntled citizens.

Given this framework, this thesis analyses the impact different external factors have on individual wellbeing. One of the main highlights of the current times was the last economic recession. The first chapter looks at the impact the recession had on individuals and specifically at how countries' performance during these times affect people's wellbeing. In order to estimate the recessions effects on individual wellbeing, we analyse this indicator in 28 countries to obtain a more generalist view on how people are affected. One of the main findings of this chapter is a perceived improvement in self-reported wellbeing few years after the recession started, while the macroeconomic indicators had not yet recovered. We make the assumption that people adapted to the economic conditions they were facing.

Adaptation is a common factor throughout the thesis; the following chapter investigates how people adapt to health shocks, specifically acquired amputations, and take this analysis further into analysing if individuals acknowledge the adaptation by observing how they rate other people in the same situation as themselves. The main focus of this chapter is to investigate the main factors that determine the gap between amputees' self-reported quality of life and ratings

made by a control group and for peers, and how this dynamic evolves over time; whether duration since event leading to amputation has an effect on the gap between the ratings of the different groups analysed.

Existing literature and the current second chapter showed that amputees adapt to their condition; in the first chapter we also showed that individuals are affected by economic conditions in their countries. in the third chapter, we bring these two topics together by analysing how a government reform, a consequence of the last recession, impacts disabled individuals who are amongst the most affected group of individuals. A new policy was adopted in the UK in 2013 to reform the benefits scheme in order to reduce the amount paid and the pool of receivers as well. we consider this provides a good framework to analyse how this affected disabled individuals who receive benefits, given the premise that a lower disposable income has a negative effect on wellbeing, but also, individuals adapt.

Although existing evidence is conflicting on the relationship between income and wellbeing over the long term (see discussion in section 1.2.2), it has been found that people are concerned about growth, employment and stability. This thesis analyses the impact on wellbeing of external factors that encompass all these concerns; economic recession, health shocks and government reforms.

In the first chapter, we analyse the effects of the last recession on individual wellbeing. The extensive research on individual wellbeing includes as determinants personal characteristics and macroeconomic indicators such as GDP, unemployment and inflation. In our analysis we move forward and include sovereign ratings as well, as a representative tag of each country. Their role in this analysis is to control for the economic crisis effects above the usual macroeconomic indicators, as sovereign ratings encompass more factors and provide a larger view on how a country is performing. Moreover, the last recession has been largely affected by performance on financial markets and for this reason we test whether individuals are affected by changes in these markets, which have been largely mediatized.

For this purpose, we analyse all 28 European Union (EU) countries to have enough variation, as some countries would have been affected more than others. We have constructed a database from different sources; we included individual life satisfaction responses and associated personal characteristics from the Eurobarometer, a twice-yearly European survey. We complement the individual data with macroeconomic indicators, including GDP, unemployment, inflation, GDP growth, and other welfare measures such as percentage of population living in urban areas, life expectancy, number of internet users, education enrolment, mortality, alcohol consumption etc. Lastly, we included Fitch sovereign ratings. The period analysed is 2004 – 2013 to capture the onset of the recession, namely December 2007. The dataset obtained is a pooled cross-section, as the individuals selected for the Eurobarometer survey vary with every round. To account for the spurious effect of time we also included yearly dummies. We control for country effects as well.

Our main analysis revolves around the dynamics of individual responses to the life satisfaction question. There are four possible responses on how satisfied individuals are with their life.

Given that the dependent variable is a categorical one, an ordered logit or probit model is usually implemented in existing research. However, both of these models imply that controls determine the same effects on each category of the response variable, an assumption named Proportional odds. The assumption is often violated. We implement a test that verifies if the assumption is violated and we obtain that for some variables the effects are similar on all categories, while for other the assumption is indeed violated. In this context, we implement a partial proportional odds model, where some variables determine different effects on the response variable, and others are constant. The choice of which controls are allowed to vary is based on the test on Proportional odds.

We firstly analyse a simple model where we look at how changes in our controls determine changes in individuals' responses. We obtain here that when sovereign ratings increase, people are more likely to report higher life satisfaction scores. We further test these results in a diff-in-diff model where we control for changes in ratings after the onset of the recession, by comparing changes in reported life satisfaction before and after 2007, in countries where sovereign ratings have not been changed and in those where ratings have changed. We obtain that in countries where sovereign ratings have changed, people are more likely to report lower scores of life satisfaction, after 2007, compared to control countries. Lastly, we analyse a relativeness assumption; i.e., whether the effects on life satisfaction are actually regional. We test here how individuals report life satisfaction if sovereign ratings are increased in the region they are part of. The results of this analysis indicate that increases in sovereign ratings in the countries of a specific region are associated with improved life satisfaction. Our results are robust to several tests.

In line with existing literature, we obtain that individuals are largely affected by their own personal characteristics. Also, increases in unemployment and inflation rate are negatively associated with wellbeing, while an improvement in GDP appears to increase the likelihood of choosing better life satisfaction outcomes. We also observe differences in how individuals report life satisfaction in different countries.

But, remarkably, we obtain robust evidence that the worsening of a country's sovereign ratings has a negative and statistically significant association with the wellbeing of individuals. Thus, sovereign rating changes have an effect on an individual's subjective wellbeing that *transcends* variations in his or her specific circumstances and fluctuations in all other more commonly used macroeconomic indicators. More importantly, our results also indicate that there was a recovery in life satisfaction after 2010 even when objective economic measures remained unchanged, which we interpret as an adaptation to harsh economic conditions.

As we suspect adaptation to be behind improved wellbeing in recent years, we look into how people adapt to health conditions. The second chapter specifically focuses on disparities of Quality of life (QoL) measurements between patients and general public or taxpayers. Currently, the general public's evaluations of health states using hypothetical scenarios are preferred to patient evaluations and this guides some of the resource allocation of health care expenditure. However, it has been long confirmed that patients provide higher QoL evaluations

than the general public. Most research attributes the disparities to adaptation and scale of reference bias.

In this chapter, we test different hypothesis on QoL evaluations reported by patients with acquired amputations, and the public. The aim of this chapter is to determine what explains the gap in QoL evaluations, how fast patients adapt and mainly, how patients evaluate the QoL of others living with the same condition. The analysis is implemented on data obtained from two groups, a treatment group formed of individuals with amputation, caused by an injury or medical condition, and a control group, matched on personal characteristics with the treatment group.

The amputations suffered are grouped into three main categories, upper body, lower body and two or more amputations. Both groups respond to a quality of life question, on a scale from 0 to 100, which we treat as a continuous variable. Our variable of interest is duration since event leading to amputation. We are interested in how the duration affects QoL assessments. We control for the type of amputation, cause of amputation, and different personal characteristics, including pain and comorbidities. The control group assesses hypothetical QoL assuming they would have the same amputation as the individuals in the treatment group they are matched with. We also distinguish amongst those in the control group that know an amputee and those who consider themselves optimists, and lucky in terms of income and health.

We observe that patients adapt to health states as soon as within the first two years since amputation, whereas the public perception does not reflect this phenomenon. In our dataset, each additional month since amputation results in an increase of 8.50% in reported QoL on average. Our results show no difference in assessments between men and women, while those with higher education report higher QoL values, and those with comorbidities lower. We propose that adaptation explains at least part of the gap between patients' and the public' QoL evaluations.

Based on descriptive statistics, we inspect if amputees can predict their QoL and if there are any differences between QoL predictions made by individuals with an injury-related amputation and those with medical-related amputation. We observe that individuals with an *injury*-related amputation predict with a smaller error compared to those with *medical*-related amputations. Over the long-term, values converge for both groups.

Another confirmation of adaptation surfaces from analysing the dynamics of the QoL evaluations of patients. When we examine the evaluations done by amputees on behalf of others living with the same disability, we find that patients with shorter duration since event evaluate their own QoL higher than those of peers, but their reported QoLs converge over time. We hypothesise that patients themselves acknowledge adaptation. This raises the question of whether this also is the case for patients with different conditions, such as diabetes or urology conditions, for which adaptation has also already been proven.

In the third chapter we look at how individuals are affected by government reforms as a consequence of the recent recession. We continue our analysis on individual wellbeing and in line with existing research, we control for both personal characteristics and macroeconomic

indicators. However, in this chapter, we focus on the welfare reform started in the UK in 2013 meant to simplify and reduce at the same time the benefits system. We analyse the relation between benefits and wellbeing for disabled individuals in the context of the welfare reform.

Since the government benefits reform in 2013, several analyses using data from the Office of National Statistics suggest that the general population's wellbeing has been unaffected by the cuts. In this context, we aim to test whether this applies to the disabled population. Receiving benefits, and income in general, have been said to play a role for mental health, emotional wellbeing, and child development. However, the effects of sudden changes in disposable income on the wellbeing of the disabled population, which relies heavily on state allowances, has not been researched yet.

Our study exploits the Annual Population Survey – Personal Wellbeing dataset (APS), which contains different measures of wellbeing (life satisfaction, anxiety, happiness, personal worthiness and self-assessed health) as well as information that allows us to classify individuals as *disabled*. The APS also includes personal characteristics including lifestyle choices, environmental and social indicators. We complement our dataset with regional indicators such as variations in wage and unemployment rates. The period analysed is 2011-2014. We include regional and yearly dummies and control for the regions where the reform was first implemented. The dataset is a pooled cross-section as the individuals surveyed in the APS are different every wave.

We exploit the APS to estimate the impact of the welfare reform on the wellbeing of disabled individuals in general and those disabled receiving benefits in particular, by means of *diff-in-diff* models. We apply an instrumental variable approach to correct for the potential endogeneity of disability. One of the wellbeing measurements, *self-assessed health*, is a categorical variable. Based on the argument provided in the first chapter, we conduct the test on proportional odds and we find that the proportional odds assumption is violated. Thus, for this variable, we implement the partial proportional odds model. For the other four variables, we implement an Ordinary Least Squares estimation when we only assess the disabled individuals, and a two-stage least squares estimation when we use the full sample and have to correct the endogeneity of being disabled.

We conduct three analyses; we first look at how disabled individual's wellbeing assessment changed after the welfare reform started. Secondly, we perform the same analysis using the whole sample, in a diff-in-diff estimation. Here we analyse how the wellbeing of those disabled has changed after the reform, compared to controls. Lastly, we used a diff-in-diff-in-diff estimation to assess the impact of the welfare reform on disabled individuals who received benefits as well.

Our results indicate that the introduction of the welfare reform in 2013 made disabled individuals worse off in terms of all measures of wellbeing analysed. When compared to non-disabled responders, those with a disability are worse off in terms of *life satisfaction* and *self-assessed health*, after the welfare reform. Disabled individuals on benefits became worse off in terms of all measures of wellbeing analysed and reported higher levels of *anxiety* when

compared to control group after the reform. Our results are robust to several checks and indicate that the welfare reform has made disabled individuals feel more anxious and worse off in terms of their wellbeing.

This thesis highlights the importance of the effects external factors have on individual wellbeing and how people are affected by recession, health conditions and government reforms. It also highlights the dynamics of this relationships by considering different settings and controlling for several cofounding factors. We found negative impacts on individual wellbeing in countries were sovereign ratings indicate economic downturn and on individuals affected by government reforms. We also found not only that people adapt to health shocks, but they also acknowledge it. We can infer based on our findings that health care resource allocation can be based on patients' quality of life valuations, as long as adaptation is accounted for.

1 Estimating the relationship between society's subjective wellbeing and macroeconomic indicators in the context of the last recession

1.1 Introduction

The impact of the 2007 economic crisis in Europe has gone beyond changes in macroeconomic indicators. It has affected the lives and the outlook of millions of individuals in Europe. Macroeconomic indicators such as unemployment rates and GDP growth capture the evolution of the economic crisis and can be used to analyse its effects on individual wellbeing. But, as emphasized by the Stiglitz report (Stiglitz et al, 2009), measures such as GDP are no longer sufficient.

Most research on individual wellbeing analyses the *determinants* of Subjective Wellbeing (SWB); i.e. to what extent individual characteristics or macroeconomic indicators contribute to changes in this variable (Diener, Diener & Diener, 2009; Kahneman & Deaton, 2010; DiTella, MacCulloch & Oswald, 2003). Other macro indicators, in principle, by being more remotely related to individuals' daily lives, should not necessarily have an impact on them. In this chapter, we investigate whether changes in *sovereign ratings* during the last financial crisis did indeed add to and magnify the negative effects of the crisis on individual wellbeing. In particular, we analyse the relationship between individual SWB and changes in sovereign ratings, controlling for variations in individual socioeconomic characteristics, regional controls and changes in macroeconomic indicators. Furthermore, our methodological approach enables us to test whether countries have distinctive preferences over life satisfaction ratings, i.e. different threshold or cut-off points between self-assessed wellbeing categories. We fit a model that allows us to have unconstrained variables, which leads to different coefficients per category of the dichotomous variable. As in many cases, and valid here as well, the Proportional Odds (PO) assumption is violated and we find that a Partial Proportional Odds (PPO) model fits the data better.

Our results indicate that changes in sovereign risk ratings after 2007 had a direct effect on individual SWB even after controlling for changes in other macroeconomic variables such as unemployment, debt, GDP growth and individual socioeconomic status, including being in employment. In agreement with existing research, we find that individual characteristics explain most of the variation in SWB, as do macro indicators such as unemployment and GDP. After 2010, individual SWB increased slightly in some countries; we believe this is evidence that individuals may have lowered their wellbeing expectations and adapted to harsh economic situations – similar to the observed adaptation to worsened health states. Our results are robust to several specifications.

The main contribution of this chapter to the extant literature is the exploration of how changes in *sovereign ratings* affected people's wellbeing during the last recession. We include *sovereign ratings* as a determinant of individual wellbeing in the context of the last recession based on two assumptions. Firstly, sovereign ratings, by encompassing a series of performance indicators of a country, are indirectly affecting individual wellbeing. The hypothesis is that changes in sovereign ratings signal the country's ability to cope in times of economic hardship

and the likelihood of recovery or further deterioration. If sovereign ratings are decreased, the economy is weakened, government actions are worsening the situation and investors are deterred to consider the country in question. Sovereign ratings signal more issues in a country, beyond a decline in GDP or increased unemployment rate, which are the common indicators used as determinants of wellbeing.

Secondly, we assume sovereign ratings could have a direct impact on people's perceptions of their country's economic outlook, which in turn, affects the perception they have of their own wellbeing. This is particularly relevant in the context of the last recession, during which increased mass media coverage of the preceding financial crisis and the blame attributed to the financial sector for the recession, attracted more than ever before the attention of even those with no direct stakes in the financial market.

This chapter is organised as follows: the next section discusses the main literature related to subjective wellbeing and the effect of the economic crisis on wellbeing. Section III describes the data, while section IV explains the empirical strategy. Section V presents the estimated results, followed by a discussion in section VI, robustness checks in Section VII and conclusions in section VIII.

1.2 Background: Subjective wellbeing and economic crisis

First, this chapter particularly relates to the existing strand of literature testing the validity of SWB, most commonly measured as happiness or Life Satisfaction (LS), as a measure of true individual wellbeing. Second, our chapter also relates to the literature exploring the determinants of SWB. Finally, and most importantly, our study builds on the existing literature on how economic crises, and in particular the one that started in 2007, impacts on SWB.

This chapter was compiled based on a targeted review on SWB ('wellbeing', 'life satisfaction', 'happiness'), economic crisis and sovereign ratings, where seminal papers were identified through published reviews. The review was conducted in PubMed, university online library and Google Scholar. The literature was supplemented by supervising professor Mireia Jofre-Bonet. The literature was updated using the university online library in January 2019 for the impact of the recession on individuals, using 'recession' and 'wellbeing' terms. The published journal articles in the last five years have been screened. And additional search was done to identify whether research was published on wellbeing and sovereign ratings, but no articles were identified.

1.2.1 Self-reported SWB as a proxy for true individual wellbeing

In this chapter we focus on individual wellbeing, which benefits of an extensive research. The hypothesis at work here is that individuals can assess best their own wellbeing. Subjective health and wellbeing responses are considered a good proxy for an individual's wellbeing based on the arguments that individuals are able to assess their own situation (results in literature are consistent and corresponding to expectations) (Ferrer-i-Carbonell, 2002) and their

responses are comparable (within the same language community) (ibid). Data on SWB are valid approximations of true wellbeing as the questions asked are related to health status, psychological factors and social relationships. Moreover, SWB allows a direct analysis of welfare (Kahneman & Krueger, 2006).

SWB is commonly proxied by either *Life Satisfaction* (LS) or *Happiness*. However, LS is preferred to *happiness* as it is related to long-term factors (income, education), whereas happiness is more affected by shorter-term determinants (Walsh, 2012). The literature finds that LS is determined mainly by economic factors, whereas happiness is influenced by social relationships (Diener et al., 2009; Kahneman & Deaton, 2010). Also, LS is recommended as it is a multidimensional indicator (Ferrer-i-Carbonell, 2002), is relatively more stable, and allows for the study of adaptation (Kahneman & Krueger, 2006). However, DiTella et al. (2003) find that LS and *happiness* regressions have a common structure across countries. For the purpose of our research, we have chosen *Life Satisfaction* as our variable of interest and measurement of SWB, based on the following considerations:

- LS allows us to study the implications of the last economic crisis over the long-run and determine whether individuals adapted
- As both *happiness* and *life satisfaction* respond to the same determinants, we assume it is of little consequence which variable is used in the analysis
- A large dataset (Eurobamoter) collecting self-reported LS and personal characteristics, was identified that covers all countries in the European Union over a long period of time

1.2.2 SWB and its determinants

There is a strong consensus that the most important determinants of SWB are personal characteristics, unemployment, inflation and growth. In particular, marital status, employment, personal income, self-reported health and other factors explain around 80% of the variation of wellbeing, whereas socioeconomic factors (based on employment, income and education) count towards 8–20% (Kahneman, Diener & Schwarz, 1999). The relationship between age and SWB has a U-shaped form, with minimum SWB achieved at about 30 years old (Oswald, 1997; Clark & Oswald, 1994; Blanchflower & Oswald, 2004a; Ferrer-i-Carbonell & Gowdy, 2007; Easterlin, 2006). Married people, women and white people have been found to report higher scores on all tested measures of SWB (DiTella et al., 2003; Oswald, 1997; Clark & Oswald, 1994), although these results are subject to control variables' choices. Better-educated individuals are generally happier (Oswald, 1997; Blanchflower & Oswald, 2004b), while some papers find middle-level education is associated with higher scores (Stutzer, 2004). Healthier people are also more satisfied with their lives (Clark & Oswald, 1994).

With respect to the macro indicators, unemployment has been found to be the most influential factor affecting LS. In particular, unemployment is strongly and negatively correlated with happiness and LS measured both at individual and aggregate level (Oswald, 1997; Theodossiou, 1998; Clark & Oswald, 1994; Winkelmann & Winkelmann, 1998). Moreover, it is claimed that unemployment is involuntary, in contrast to the popular belief that in developed economies people prefer to be unemployed, incentivised by the benefits they can receive

(Theodossiou, 1998; Clark & Oswald, 1994). In fact, individuals prefer low-paid jobs to unemployment, except for women who prefer to have no job than a small wage (Theodossiou, 1998). In the longer term, people are still unhappy when they are unemployed, a condition to which individuals do not adapt (Winkelmann & Winkelmann, 1998).

Existing research shows a strong relationship between average SWB levels and GDP per capita and no evidence of a satiation point (Stevenson & Wolfers, 2008). Also, Winkelmann and Winkelmann (1998) find a strong correlation between income and increasing LS. Stevenson and Wolfers (2008) contradicts the Easterlin paradox, which implies that in the long-term economic growth is not matched by the same increase in wellbeing. Easterlin et al. (2010) revisited his original research (1974) and concluded that while in the short run life satisfaction and national income have a statistical positive relation, it does not follow in the longer run. He thus suggests that governments should focus on more urgent personal concerns (such as health and family life) that make people more satisfied with their lives. Regarding the income satiation point, Layard (2003) finds that after $15,000 per capita happiness is independent of national income.

In line with the Easterlin paradox, Oswald (1997) and Delaney (2009) also find that GDP does not buy much extra happiness. However, individuals are concerned about growth, employment and stability (measured by inflation rate and long-term interest rate). Economic growth is positively related to SWB, whereas inflation rate and long-term interest rate individually negatively affect SWB, but have to be tested separately, otherwise inflation becomes insignificant (Welsch, 2007; DiTella et al., 2003).

1.2.3 The impact of economic crises on individual wellbeing

The second stream of literature that relates to this chapter is that on the impact of the last recession on individual wellbeing. Scholars have labelled the last recession – which, according to the National Bureau of Economic Research, started in December 2007 and ended in June 2009 – the *Great Recession*. During this economic downturn, the average household income in the USA dropped by 4.2%. Curiously, although the worst of the recession has ended in some regions, its effects have not disappeared. In 2009, the average household income in the USA was $52,195 (in 2011 dollars), whereas in 2011 it had declined to $50,054 (Miller & Washington, 2013).

Other statistics show that while in 2007 6.3% of US families included at least one unemployed person, this percentage increased to 12% in 2009 and decreased slightly to 11.5% in 2011 (ibid). In terms of unemployment, the rate increased by 5.5% during the Great Recession, reaching 10% in the USA in 2009 (Kudlyak & Schwartzman, 2012).

Unemployment has a negative effect on wellbeing, being associated with feelings of loss of self-esteem, stress, insecurity, hopelessness, isolation, and affects consumption patterns and social life (Hiswåls et al. 2017). However, interestingly, rising unemployment rates is associated with increased levels of job satisfaction amongst those still in employment during economic hardships (Borra and Gomez-Garcia 2014). This latter result obtained in a cross-sectional analysis in Spain during the last recession shows that while people feel more insecure when

unemployment rises, peers' unemployment increases satisfaction with jobs for those who still have a job.

Most studies showed a decline in life satisfaction evaluation in the first years, followed by a recovery after 2010 (Deaton, 2012; Gudmundsdottir, 2013; Walsh, 2012). Financial losses were associated with reductions in consumption; many households reduced consumption even without experiencing financial losses. The strongest impact on wellbeing came from unemployment, considered as the main concern at macro level (Latif, 2010).

Financial crises have long-term implications in multiple domains for individuals. Analysing over 100 financial crises between 1981-2007 period across the globe, Mohseni-Cheraghlou (2016) found that crises are associated with increased crime rates, food insecurity, income inequality and suicide rates. In particular, financial crises accompanied by recessions have stronger negative impact on individuals' wellbeing, and even more so do government actions, such decreased health, education and welfare expenditure, in the aftermath of financial crises. This analysis highlights that while people recover, there are losses that leave permanent scars.

There are vulnerable groups which are more severely affected by economic crisis. Simona-Moussa and Ravazzini (2018) analysed the effects of two recurrent recessions (the Dot-com crisis [2002-2005] and the Great Recession) on objective (defined as income poverty and material deprivation) and subjective (wellbeing and satisfaction with financial situation) quality of life in Switzerland. The analysis was based on a longitudinal database, the Swiss Household Panel, over the 2000-2013 period. They obtained that single parent and large families were most strongly affected during the first crisis; however, these groups showed improved quality of life during and after the Great Recession, indicating that they had now the resources to cope with financial hardship. These results highlight that people learn from past experiences and cope better when faced with similar situations.

Youngsters are also a group vulnerable during economic recession. According to a study on the Longitudinal Study of Australian Youth (LSAY) which includes self-reported wellbeing responses in 12 domains of individuals aged between 19 and 22 years, youngsters are mostly affected in terms of general life satisfaction, social domains and career and future prospects (Parker et al. 2016). Youngsters report a decline in wellbeing in 2009, followed by a recovery in 2010. However, wellbeing levels drop again between 2011 and 2013, most likely due to consequences of the economic crisis (rising unemployment rate). These results highlight that people are not only affected by the economic crisis itself (lower quality of life during crises) but also in the aftermath of crisis due to austere measures governments take.

Existing research shows that while individuals are negatively affected by economic crises, not all factors have a negative effect on wellbeing. Evans et al. (2017) studied the life satisfaction and happiness responses in 25 European countries in three waves of the European Quality of Life Surveys (2003, 2008 and 2012) and observed that increased income inequality was not significantly associated with a drop in life satisfaction and happiness reported. They obtained evidence that income is strongly related to wellbeing, but the gap between income levels did not significantly affected reported life satisfaction or happiness. However, these implications

could be tested over a longer time period.

Similarly, published evidence showed that health is also not affected negatively by the conditions of an economic crisis according to Ruhm (1996). Ruhm (1996) finds that, although there is a strong inverse relationship between unemployment and mortality, health worsens as the economy improves. During recession, people find more time for physical activities and pay more attention to their nutrition. Moreover, this study finds there is a weak relationship between health and personal income.

The latest recession had a major impact on nutrition. Bruening, MacLehose, Loth, Story and Neumark-Sztainer (2012) studied regional impacts in Minnesota, where an alarming increase in food insecurity emerged, especially in the case of low-income families. According to national estimates, 16% of adults and 25% of children are food insecure in the USA. This is the result of the great difference in price between nutrient-dense foods, such as fruits and vegetables, and energy-dense foods, such as soft drinks or snacks. As a consequence of price increases and major restructuring, many families considered budget adjustments, which included changes in the food purchased. As a result, more adults are facing obesity and overweight. Food insecurity has been related to many health issues, including diabetes, stress and hospitalisation.

In a paper analysing the impact of the crisis in the USA, Deaton (2012) finds that from fall 2008 until spring 2009 there were sharp declines in life satisfaction evaluations and sharp increases in worry and stress. However, in 2010 the evaluations had largely recovered, even though unemployment was still high. According to his research, wellbeing closely tracked the evolution of the stock market over 2008–2010. Deaton concludes that even if they are not directly affected, people are interested in the stock market, which became the most watched indicator not only for the present situation, but also for trying to understand future market developments. Most likely, the stock market and LS respond to the same stream of news over the period studied.

Similar results were obtained by Ratcliffe and Taylor (2015), who found that mental wellbeing improves when stock market indices increase. The authors conclude, based on an analysis of British Household Panel Survey data, that the stock market index represents an indicator of macroeconomic performance. They emphasise that even though an individual might not be a stock market player, his or her wellbeing might be affected through the correlation between the stock market index and macroeconomic performance.

1.2.4 Country sovereign ratings and the last recession

Credit ratings agencies, such as Moody's, Standard & Poor's, and Fitch, provide important signals in the financial markets, not only in times of economic boom but also during recessions (Dreibelbis & Breazeale, 2012). Changes in credit ratings and statements on country-specific economic outlooks have a stronger effect on both domestic markets and foreign financial markets during periods of crisis (Kaminsky & Schmukler, 2002). The attraction of funds and foreign investment improves the economy by increasing GDP growth, especially in countries with well-developed financial markets (Alfaro, Chandler, Kalemli-Ozcan & Sayek, 2004).

Many countries, especially European ones, have seen their ratings downgraded, and the map of AAA ratings has shifted much recently. France's debt rating has been reduced in 2012 to Aa1 and received a negative outlook, being under the threat of further downgrading. Moody's has publicly stated that underlying their decision are the factors of economic stagnation and the risk that Greece will exit the Eurozone, with France forming part of the bailout team. The agency also cited France's lack of innovation and the rigidity of its labour and services markets, which diminish competitiveness.

Standard & Poor's downgraded the status of Spain's bonds to BBB– in 2012, a rating that is just above 'junk' status and was given a negative outlook by all three main rating companies. The agency took into account risks to public finances and the incapacity of public institutions to deal with current challenges. Moody's also set a negative outlook in the same year for the UK, after years of stable outlook. Moody's claimed that their decision was based on a 'lower-than-expected trend economic growth' (Mahoney, 2012). The downgrades will have an enormous effect on these economies, deterring them from the possibility of borrowing money on the international markets (*The Guardian*, 2012).

Many nations are facing rating downgrades, indicating a less healthy economy. At the same time, the welfare indicators illustrate a reduced quality of life at individual level. Almost every family is affected by factors such as unemployment, lower wages, increased prices and a poorer-quality health system. The proposed chapter aims at identifying an association between financial indicators and a society's welfare. The motivation for this analysis lies in the fact that credit ratings are seen as signals of the financial health of the assessed country or economic agent, and as such the evolution of these ratings shows an improvement in or a downgrade of the respective economy.

1.2.5 Methodology for analysing SWB indicators

There are two strings of literature related to the methodology used to analyse SWB indicators. Psychologists suggest that answers to SWB indicators are cardinal and differences between levels are proportional. Following this perspective, an OLS estimation is customarily applied when determinants of LS are investigated. Economists tend to agree that the scores are ordinal – the differences between the responses being unknown but individuals having the same interpretation of each answer. Research suggests that, within the same language community, respondents have a common understanding of the scale (Ferrer-i-Carbonell, 2002). Thus, economists usually apply Ordered Probit or Logit models instead.

A main assumption of research on LS, both in psychology and in economics, is that general satisfaction is a proxy for welfare, the measure actually sought after (Shizgal, 1999; Fernandez-Dols & Ruiz-Belda, 1995; Sandvik, Diener & Seidlitz, 1993). Ferrer-i-Carbonell and Frijters (2004) analyse the differences between psychologists' estimations (OLS model) and economists' estimations (Ordered Latent Response models) and indeed obtain small significant disparities. However, differences are more significant when controlling for individual fixed effects.

Ordered Probit/Logit models fit the Proportional Odds/Parallel Lines model, based on the

assumption that the coefficients are the same for all categories of the dichotomous variable. However, in some cases this assumption is violated. In such cases, less restrictive models can be used, one where either all coefficients are different across the categories of the dependent variable – the Generalised Ordered Logit model (Gologit) – or only some of them vary – the Partial Proportional Odds model (PPO). This latter model is easily estimated using the Stata command 'gologit2' (Williams, 2006), whose options allow us to constrain only those variables that do not violate the Proportional Odds assumption. The model is discussed in more detail in the Empirical Strategy section.

The Gologit model has not been used extensively in research, but there are some papers, including in health economics, that apply this estimation. Among these, Cubi-Molla and Herrero (2012), Van Doorslaer and Jones (2003), Khedhiri et al. (2010) and Dardanoni and Li Donni (2012) analysed different health topics applying a PPO model where the coefficients were allowed to vary across health states, gender and age groups. Hernandez-Quevedo, Jones and Rice (2005) find that applying different thresholds shows reporting bias. Groups use their own reference points in interpreting and estimating responses to the same question. Boes and Winkelmann (2004) analysed the relationship between income and happiness using three estimations: Ordered Logit, Generalised Ordered Logit and Sequential Logit. They find that the Proportional Odds assumption has been violated for the dataset used (the German Socio-Economic Panel, the 1984 and 1997 waves) and estimate a PPO model where income has different coefficients along the categories of happiness, the dependent variable. As such, Boes and Winklemann (2004) obtain that income determines different odds of reporting higher scores of happiness.

Given this background, we follow the same procedure by first estimating a Standard Ordered Logit model, then testing for the Proportional Odds assumption that we find is violated. As such, our benchmark model is estimated with a PPO model where we allow for different cut-off points. In the following section, we present the dataset used in our analyses.

1.3 Data

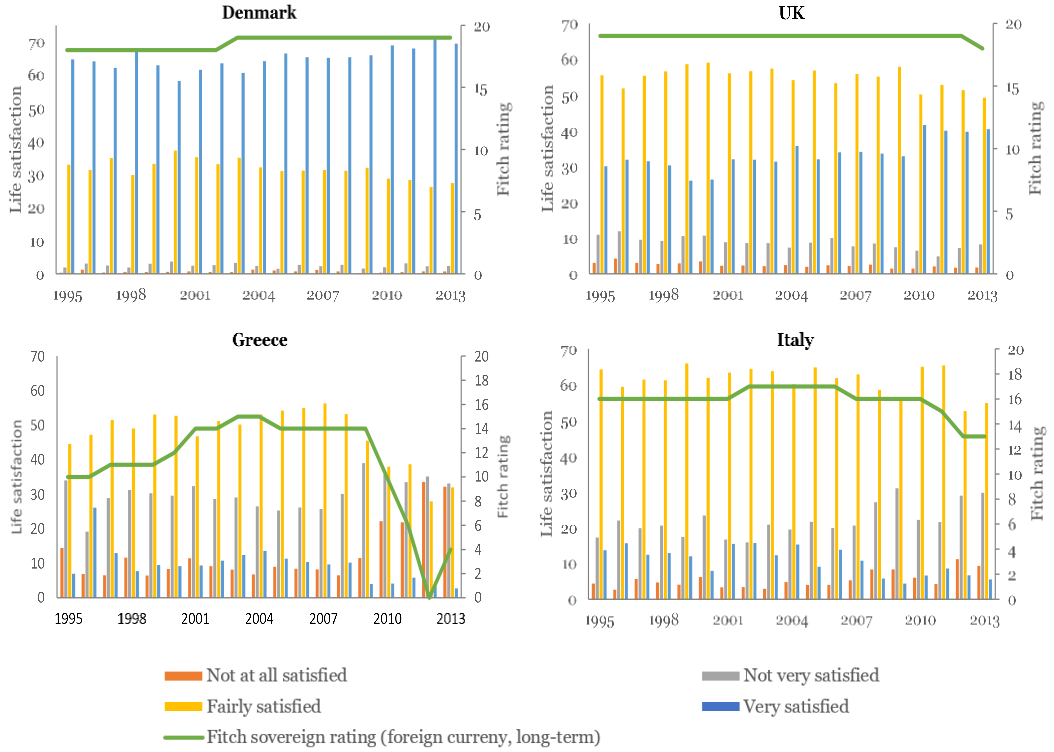
We exploit individual-level data from the Eurobarometer surveys on LS and personal characteristics, from 2004 to 2013. We limit our dataset to this period to include all 28 European Union (EU) member countries. The Eurobarometer is a European-level survey that was established in 1973. The survey contains information on socio-demographic characteristics of the respondents, health, and attitudes towards risk. In this study, we extract information on the 28 EU member countries. Eurobarometer surveys are conducted twice a year; for the purpose of this study we chose data from the spring waves, based on available data. When data were not available from the spring survey, we collected data from the autumn survey and included a dummy variable to control for the time of survey.

Our variable of interest is self-reported wellbeing. Specifically, we consider the answers of approximately 1,000 individuals per country per year (weighted using the population size weighting provided in the Eurobarometer survey, for the sample to be representative of each country's population) to the following question: 'On the whole, are you very satisfied, fairly

satisfied, not very satisfied, or not at all satisfied with the life you lead?'.

Amongst European countries, responses to LS are fairly dispersed, as it can be observed in the few selected countries in **Figure 1** below. These four countries have been selected to illustrate examples with both high and low variability in LS and sovereign ratings. While in the UK and Denmark both sovereign ratings and frequencies of LS responses have been stable over the studied period, in Italy and Greece there have been higher variations after 2007. These dynamics are more obvious in Greece where high declines in sovereign ratings are observed after 2007, and in the same period, less individuals have chosen higher scores and more responded with lower LS scores, "Not at all satisfied" and "Not very satisfied". Amongst all 28 EU countries the variability in sovereign ratings vary and this is useful in our diff-in-diff analysis, presented in the following section.

Figure 1. Evolution of life satisfaction responses and sovereign ratings over 1995–2013, selected countries



The personal characteristics available are age, education, gender, occupation, children, and marital status. Education is a group variable, indicating at what age the individual finished full-time education. Gender is defined as a dummy variable with 0 for male and 1 for female. Occupation is a 15-value variable, indicating specific work status. The 'children' variable represents the number of children under 15 years old in the household.

We complement the information from the Eurobarometer with the following macro variables:

Country sovereign ratings: We use Fitch sovereign ratings, available for foreign currency financial obligations, long-term and short-term, and, for the local currency financial

obligations, long-term. According to Kim and Wu (2008), short-term ratings deter any capital flows and financial investments, foreign currency long-term ratings have the most significant impact on capital flows and local currency long-term ratings have an inconsistent impact on the financial sector. Considering that our data is yearly, and it does not reflect short-term changes, we include only long-term ratings, both local and foreign currency. Fitch sovereign ratings are assigned based on the country's ability to meet its foreign and respectively local financial obligations. The Fitch long-term rating scale includes 20 possible scores, from AAA (highest rating that denotes the lowest possibility of default risk), to RD/D (lowest rating, restricted default or default). The ratings have been converted to numeric scale, from 0 (default) to 19 (highest rating). The Fitch long-term ratings are detailed in Appendix 1.11.1.[1]

Macro indicator controls: We also control for GDP per capita in logarithmic form (sourced from World Bank); GDP growth rate (World Bank); inflation rate (GDP deflator, World Bank); unemployment rate (OECD); youth unemployment rate (World Bank); number of internet users per 100 people (World Bank); percentage of urban population, young population (0–14 years old), and old population (above 65 years old) (all three indicators from World Bank database); alcohol consumption per capita in litres (OECD); infant mortality rate (World Bank); BMI (WHO); life expectancy at birth (World Bank), and tertiary education enrolment (OECD). We also control for openness, a constructed indicator as the ratio of imports and exports of a country's GDP. Common variables included in existing research on SWB are unemployment, inflation and growth. There is a lack of consensus on the national income effect on SWB, but researchers agree this indicator is to be included, nonetheless. Based on existing research and the importance of macroeconomic indicators, we decided to include as many macro controls as possible, to avoid bias. As these controls might be correlated with sovereign ratings, we conducted an analysis including the residuals of sovereign ratings (estimation on macroeconomic indicators) in the main estimated equation. This analysis is further discussed in Section 1.8.3.

Other controls: We also control for country and time effects; these collect the impact of other variables we do not include. As the individuals differ every year, we cannot control for individual effects. We thus obtain a pooled cross-sectional panel (merged database) of 28 European countries studied from 2004 to 2013: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey and UK. In **Table 1,** we present the statistical summary of the variables included in our estimations.

[1] The sovereign ratings data were obtained with the courtesy of Professor Keith Pilbeam based on his licence and the entire dataset cannot be provided. A sample of data was provided in Figure 1 and mean and standard deviation in Table 1.

Table 1. Summary of the response and control variables

Variables	Description	Mean	St. Deviation	Max	Min
Life_satis	Response to life satisfaction question, 4 responses: 1: Not At all Satisfied (NAS); 2: Not Very Satisfied (NVS); 3: Fairly Satisfied (FS); 4: Very Satisfied (VS).	1 –6.76% 2 –19.30% 3 –53.05% 4 –20.89%		4	1
F_lt_fitch	Foreign currency, long-term Fitch rating	15.003	3.877	19	0
L_lt_fitch	Local currency, long-term Fitch rating	15.40	3.584	19	0
GDP_growth	GDP growth rate (annual %)	1.804	4.150	12.233	–17.955
GDP_capita	GDP per capita (current US$)	28275.56	16017.8	64181.61	3331.091
Inflation	GDP deflator (annual %)	2.870	3.033	20.295	–3.916
Unem	Unemployment rate (annual %)	8.973	4.041	27.251	3.027
Youth_unem	Unemployment rate, youth total (% of total labour force ages 15–24) (national estimate)	19.784	8.570	55.3	5.3
Internet_users	# of internet users per 100 people	61.171	18.970	94.784	14.58
Openness	Exports and imports ratio of GDP	1.050	0.408	2.013	0.444
Urban_pop	% of urban population out of total	70.813	11.433	97.544	49.764
Young_pop	% of young (0–14) population out of total	16.320	2.753	28.893	13.091
Old_pop	% of old (>65) population out of total	16.058	2.911	21.136	6.460
Mortality_infant	Infant mortality rate (per 1000 live births)	5.590	4.152	27.1	2.1
Alcohol_capita	Litres per capita (aged 15+)	10.316	2.503	14.74	1.26
Mean_bmi	Mean BMI (Body Mass Index) (age-standardised estimate)	26.212	0.627	27.55	25.1
Enroll_tertiary_gross	School enrolment, tertiary (% gross)	63.801	14.523	113.983	25.047
LE	Life expectancy at birth (years)	77.622	3.269	70.865	82.936
Age	Age of interviewed person	47.520	18.227	98	0
Educ	Age when finished full-time education, divided into 5 groups	2.219	0.952	5	0
Gender	Male=1, female=0	Female: 54.78% Male: 45.22%		1	0
Occup	Occupation of interviewed person	6.88	4.413	15	0
Child15	#children under 15	.4045295	.754	15	0
Married	Marital status	1.791	1.058	6	1
Number of observations		285,638			

1.4 Empirical strategy

Our empirical strategy originates in the assumption that an individual *i*'s latent (true) life satisfaction, LS_i, can be represented by the following linear model:

$$LS^*_{i,j.t} = \alpha + \beta Z_{i,j,t} + \gamma X_{j,t} + \delta Fitch_{jt} + country\ dummies + time\ dummies + e_{i,j.t},$$

where i represents the individual; j the country where he/she lives in; t indicates the year; $LS^*_{i,j,t}$ is the continuous latent life satisfaction level of the individual i in country j in year t; $Z_{it,}$ represents *i*'s personal characteristics; X_{jt} the macroeconomic indicators in *i*'s country j;

and e_{ijt} and idiosyncratic error. As we implement our analysis on a pooled dataset of independent cross-sections, we do not observe the same individuals over time and, thus, we do not have unobserved individual effects that vary over time, i.e. fixed effects. In the case of independent cross-sections, we need to control for time dummies to avoid the spurious effect of time. The composite error term is:

$$u_{i,j,t} = a_t + e_{i,j.t}$$

Where a_t represent the effect of being in time *t* compared to *t-1*, and $e_{i,j.t}$ is the idiosyncratic error. By including time dummies in our estimation, we account for the spurious effect of time.

Nevertheless, what we observe are individual *i's* reported categorical answers to the Eurobarometer LS question, i.e.:

$$LS_{i,j,t} = \begin{cases} = 1 & if\ LS^*_{i,j,t} \leq k_1 \\ = 2 & if\ \ k_1 < LS^*_{i,j,t} \leq k_2 \\ = 3 & if\ \ k_2 < LS^*_{i,j,t} \leq k_3 \\ = 4 & if\ LS^*_{i,j,t} > k_3 \end{cases}$$

As previously mentioned, SWB indicators are commonly analysed either with an OLS estimation or a standard logit model. We first estimated our model using an OLS, and results are presented in Section 1.7.1OLS estimation, where a comparison with main results is provided. However, an OLS estimation assumes that LS indicator is cardinal, and differences between scores are proportional.

Since the observed LS is an ordinal variable, we then estimate our model using a Standard Ordered Logit model:

$$P(LS_{i,j,t} > k) = \frac{\exp(\alpha_k + \beta Z_{i,j,t} + \gamma X_{j,t} + \delta Fitch_{j,t})}{1 + \exp(\alpha_k + \beta Z_{i,j,t} + \gamma X_{j,t} + \delta Fitch_{j,t})}$$

The results of the Ordered Logit model are presented in Section 1.7.2. As previously discussed, the Ordered Latent Response model assumes Proportional Odds (PO), meaning that we constrain all control variables to have the same impact on the dependant variable, and the same coefficients, across the categories of our dichotomous variable. However, this may not always be the case. Using the Brant test, part of the *SPost* Stata routine routine (Williams, 2006), we can determine whether the assumption is violated or not. The Brant test, conducted using the *brant* command in Stata, runs a series of separate binary logistic regressions corresponding to the categories of the dichotomous variable, *k-1*. It estimates the coefficients for each logistic regression and tests whether they are statistically different (Williams, 2006). **Tables 2** and **3** below show the Brant test results of the first estimations of our four proposed[2] for some of the control variables. As LS has four categories, the Brant test runs three separate regressions, where it compares score 1 versus scores 2, 3 and 4; then scores 1 and 2 versus 3 and 4; and lastly the first three possible answers to the fourth.

[2] Brant test results for all four estimations are reported for all control variables in Appendix 1.11.21.11.2

Table 2. Estimated coefficients from j-1 binary regressions

Variable	LS>1	LS>2	LS>3
l_lt_fitch	0.01614397	0.02953757	0.05479336
Lgdpcapita	0.46960917	0.55437942	0.35993737
gdpgrowth	0.02260715	0.00158455	0.01136706
youth_unem	−0.01617501	−0.01314851	−0.00301447
inflation	−0.00390545	−0.0058963	0.00376777

Table 3. Brant test of parallel regression assumption

Variable	chi2	p>chi2	df
All	7443.52	0.000	142
l_lt_fitch	11.89	0.003	2
lgdpcapita	3.62	0.163	2
gdpgrowth	40.64	0.000	2
youth_unem	20.69	0.000	2
inflation	3.98	0.137	2

A significant test statistic provides evidence that the parallel regression assumption has been violated

The test concludes that there is sufficient evidence that the Parallel Lines assumption is violated. In this case, typically a Multinomial Logit model is used. However, this model is less parsimonious as all variables are unconstrained and it estimates more parameters than required because some of the control might meet the PO assumption (Williams, 2006). Moreover, in a totally unconstrained model the dichotomous variable is not even ordinal (Clogg & Shihadeh, 1994). As some of our variables meet the PO assumptions and some not, we choose a less restrictive model, the Generalised Ordered Logit (Gologit), which is written as:

$$P(Y_i > k) = \frac{\exp(\alpha_k + \beta_k Z_{i,j,t} + \gamma_k X_{j,t} + \delta_k Fitch_{j,t})}{1 + \exp(\alpha_k + \beta_k Z_{i,j,t} + \gamma_k X_{j,t} + \delta_k Fitch_{j,t})}$$

There are two concerns related to the Gologit model. First, the estimated probabilities can be negative (not an issue in this chapter as the model announces if this occurs); second, as previously mentioned, a totally unconstrained model is not ordinal. As our model is actually a Partial Proportional Odds (PPO) one, the latter concern is also avoided. For a more detailed technical discussion on Gologit models, see Boes and Winkelmann (2004). In our model, *f_lt_fitch*, *age*, *educ*, *gender*, *occup*, *le*, *GDP_capita (logs)*, *inflation*, *GDP_growth*, *old_pop and young_pop* are not restricted, whereas the rest of the variables are constrained, based on the complete Brant test results.

We complement our analysis running a Diff-in-Diff estimation to gauge the impact of the sovereign ratings on LS since the start of the economic recession. For this purpose, we categorise countries into two groups. One group includes the countries that had constant ratings over the studied period, i.e. sovereign ratings for these countries have not been changed; these countries constitute the *control* group for the analysis. The second (*treatment*) group includes the rest of countries, i.e., those that experienced changes in their ratings. Thus, the estimated model is:

$$LS_{i,j,t} = \alpha + \beta Z_{i,j,t} + \gamma X_{j,t} + \delta\, chg_{SR} + \mu\, d_{07} + \rho\, chg * post_{07} + \varphi Fitch_{j,t} + country\ dummies + time\ dummies + e_{ijt}$$

where d_{07} is a dummy variable indicating the recession period (defined as 0 until 2006 inclusive and 1 for the rest of the period); chg_{SR} is a dummy indicating the treatment group; and $chg*post_{07}$ is the interaction term between d_{07} *and* chg_{SR}. Thus, the *coefficient* ρ is the diff-in-diff estimator reflecting the impact the recession had on individuals in countries where the Fitch ratings changed as compared to countries where the Fitch ratings remained constant. This is a complimentary analysis meant to distinguish between the economic crisis, national indicators and sovereign ratings effects on individuals' choice of LS scores.

We are also interested in how the ratings of neighbouring countries affect the individuals' responses in a given country, which we call the *relativeness* estimation. This group analysis reflects geographical and socioeconomic closeness. To test for this impact, we first break our countries into four regions, as shown in **Table 4,** and define a variable that calculates for each country the average of the other countries' ratings from the same region. The average is calculated separately for the two ratings: we have fitchL_avg for the average of the Fitch rating on local currency, and fitchF_avg for foreign currency rating. Although there are differences between countries in the same region, in terms of welfare systems, economic resources etc., this analysis is meant to show if the performance of a region as a whole affects individuals in a country in that region. Nonetheless, individual country's controls and country dummies are included to account for local variations.

Table 4. Countries divided by region

Northern	Central	Eastern	Southern
Denmark	Germany	Bulgaria	Portugal
Estonia	Austria	Poland	Spain
Finland	France	Czech Republic	Italy
Latvia	Belgium	Romania	Greece
Lithuania	The Netherlands	Hungary	Malta
Sweden		Slovakia	Croatia
The UK		Turkey	Slovenia
Ireland			Cyprus

We estimate all models clustered by country standard errors and we tested for heteroskedasticity. Also, in all estimations we control for country and time effects, and we include a dummy for indicating whether the responses to LS come from a spring or autumn survey.

1.5 Results

Our main estimation results are presented in **Table 5**. We have four specifications for each model we run, as we control separately for GDP per capita (logs) and unemployment,[3] and also for Fitch ratings, separated into foreign and local currency, both long-term. As such, in all following tables, specification A corresponds to controlling for GDP per capita (logs) and foreign currency Fitch rating; B corresponds to GDP per capita (logs) estimation and Fitch on local currency, long-term. C and D specification corresponds to controlling for unemployment and the same Fitch ratings, local and foreign currency.

This estimation is particularly interesting insofar as it shows us how the coefficients differ from reporting one score versus another. Interpreting results from a partial Gologit model is different than a Standard Ordered Latent Response model, in the case of the unrestricted variables.[4] Such a model can be interpreted as a series of binary logistic regressions where each panel, *k*, is the reference group, including the lower categories if case, and *k+1* categories are 'recoded' as 1. Hence, we interpret the results by contrasting the coefficients of each panel with the upper categories. Accordingly, positive estimations mean that the higher the values of the explanatory variables, the higher the probability the respondent will report a higher response than a lower one or is less likely to report a lower score. A negative coefficient means that the higher the values of the explanatory variables the more likely the respondent will report a lower category (Williams, 2006).

Under the partial Generalised Ologit estimation, sovereign ratings are statistically significant and positive at 5% level of confidence, with two exceptions (see **Table 5**). In all instances, people are more likely to report higher scores of LS with higher sovereign ratings. However, the coefficients of foreign currency Fitch rating in all three panels show a decreasing probability (columns B and D in each panel, first row), meaning that their preference declines towards the higher scores. While individuals are more satisfied with their lives, they are

[3] When including both GDP per capita (logs) and unemployment, the former is statistically insignificant in all specifications
[4] The constrained variables' coefficients are interpreted as in a Standard Ordered Latent Response model

pushing away from the extremes. Local currency Fitch rating is a constrained variable and thus the coefficient is the same along the three panels (second row of **Table 5**).

We obtain similar results for unemployment and GDP per capita as in the literature. The latter is associated with probability of reporting higher scores. Similar with the case of Fitch rating (foreign currency), the coefficients of GDP per capita (logs) are also decreasing, meaning that while people are more likely to select higher scores of LS, the likeliness decreases as we approach the highest score. Unemployment's coefficients are negative in all panels and significant in the first two panels (fourth row, columns C and D). Higher unemployment is associated with probabilities of reporting lower scores. The result is even stronger as the coefficients decrease along the three panels, individuals being less and less inclined to feel satisfied with their lives at higher rates of unemployment. GDP growth rate coefficients are positive, with some exceptions, though not significant. Inflation rate is also insignificant in our estimations. The results obtained for individual characteristics are consistent with the literature and are presented in Appendix 1.11.4 (see discussion in Section 1.2.2, *SWB and its determinants*).

We also estimate the different effects by country. In Appendix 1.11.3 we present some selected European countries' results. The base category for this estimation is Austria. Most countries have negative coefficients, meaning that on average an individual from a country other than Austria will more likely choose lower scores compared with a person from Austria. Also, the coefficients decrease from one panel to another, with individuals' choice of the higher scores decreasing when compared with respondents from Austria. Exceptions are respondents from Denmark, who prefer higher scores to lower ones, reporting that they are more satisfied compared to Austrian respondents. Moreover, the coefficients increase up to panel 3, indicating a preference for the highest category, 'Very Satisfied'. There are other positive coefficients too, for Germany, Spain, France and the UK, but only in some instances and most often insignificant.

Table 5. Life satisfaction estimates – Gologit

Variable	LS> 1 vs. LS≤1				LS>2 vs. LS≤2				LS>3 vs. LS≤3			
	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT
f_lt_fitch		0.03943 (0.0164)*		0.03442 (0.0202)		0.03585 (0.0164)*		0.03682 (0.0159)*		0.03099 (0.0175)		0.04494 (0.0204)*
l_lt_fitch	0.03440 (0.0157)*		0.03786 (0.0164)*		0.03440 (0.0157)*		0.03786 (0.0164)*		0.03440 (0.0157)*		0.03786 (0.0164)*	
lgdpcapita	0.6397 (0.2295)**	0.6434 (0.2227)**			0.5999 (0.2520)*	0.6149 (0.2550)*			0.3325 (0.2733)	0.3555 (0.2798)		
unem			−0.04508 (0.0149)**	−0.04929 (0.0166)**			−0.03529 (0.0108)**	−0.03518 (0.0105)***			−0.008958 (0.0119)	−0.004828 (0.0116)
inflation	0.001847 (0.0116)	0.003004 (0.0119)	−0.004481 (0.0130)	0.0009833 (0.0171)	−0.003908 (0.0104)	−0.003245 (0.0105)	−0.007710 (0.0108)	−0.006997 (0.0113)	0.001302 (0.0088)	0.001656 (0.0088)	−0.0005541 (0.0081)	−0.001046 (0.0079)
gdpgrowth	0.003743 (0.0084)	0.002101 (0.0083)	0.003121 (0.0090)	0.002580 (0.0090)	0.001491 (0.0076)	0.0004053 (0.0082)	0.001659 (0.0082)	0.001011 (0.0089)	−0.002290 (0.0089)	−0.002926 (0.0093)	0.001755 (0.0091)	0.0006223 (0.0097)
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696
Pseudo R-squared	0.1445	0.1445	0.1435	0.1435	0.1445	0.1445	0.1435	0.1435	0.1445	0.1445	0.1435	0.1435
ll	−2.31e+05	−2.31e+05	−2.25e+05	−2.25e+05	−2.31e+05	−2.31e+05	−2.25e+05	−2.25e+05	−2.31e+05	−2.31e+05	−2.25e+05	−2.25e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users , youth_unem, le, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

Table 6 presents the diff-in-diff estimation results, with the same four specifications. The diff-in-diff coefficient, corresponding to the 'chg*post$_{2007}$' variable, is negative and statistically significant under specifications A and B in the third panel. Also, the coefficients of the 'chg_SR' are negative and significant in the first two panels. The estimated coefficient of the d_{07} variable, indicating the start of the economic recession, is not significant in any specification. According to these results, in the countries for which the Fitch ratings have changed, individuals were more likely to report lower scores after the start of the economic recession, compared with countries with constant sovereign ratings, ceteris paribus (first row, all panels).

Moreover, just by comparing the two groups of countries (second row, all panels) the likelihood of responding 'Not at all satisfied' compared with reporting any of the other three higher categories varies between 2.37 and 3.12, while the likelihood of reporting 'Not at all satisfied' or 'Not very satisfied' against 'Fairly satisfied' or 'Very satisfied' varies between 1.64 and 2.38 (second row, first two panels).

Table 7 presents the results when controlling for the other countries' ratings in the same region. Although the average of the Fitch ratings on foreign currency is only significant when controlling for unemployment (columns D of each panel, second row), the ratings average on local currency is positive and statistically significant in all estimations. We extrapolate that an increase in neighbouring countries' ratings is associated with a preference for higher scores, although the coefficients are quite small. We thus obtain a statistical proof of relativeness.

Table 6. Life satisfaction estimations – Diff-in-Diff – Gologit

Variable	LS> 1 vs. LS≤1				LS>2 vs. LS≤2				LS>3 vs. LS≤3			
	A:GDP-LT(F)	B:GDP-LT(L)	C:Unem-LT(F)	D:Unem-LT(L)	A:GDP-LT(F)	B:GDP-LT(L)	C:Unem-LT(F)	D:Unem-LT(L)	A:GDP-LT(F)	B:GDP-LT(L)	C:Unem-LT(F)	D:Unem-LT(L)
*chg*post_07*	-0.0315	-0.0236	0.0285	0.0295	-0.0595	-0.0730	0.0265	0.0114	-0.2325	-0.2391	-0.1183	-0.121
	(0.0907)	(0.0892)	(0.1231)	(0.1185)	(0.0704)	(0.0707)	(0.0949)	(0.0921)	(0.0721)**	(0.0774)**	(0.0898)	(0.0902)
chg_SR	-3.1208	-3.0935	-2.3664	0.8885	-2.3805	-2.3191	-1.6339	1.0412	-0.7644	-0.829	-0.6775	0.5571
	(0.6387)***	(0.6097)***	(0.8069)**	(0.9885)	(0.5560)***	(0.5079)***	(0.5143)**	(0.6217)	(0.6647)	(0.6349)	(0.462)	(0.5618)
d_07	-0.0841	-0.0922	-0.0534	-0.0566	0.0701	0.0736	0.0404	0.0443	0.0971	0.101	0.1205	0.1212
	(0.0956)	(0.0954)	(0.1148)	(0.1121)	(0.0719)	(0.0702)	(0.0845)	(0.0782)	(0.0721)	(0.0727)	(0.0743)	(0.0743)
f_lt_fitch	-0.0010		0.0002		-0.0275		-0.0220		-0.0030		-0.0029	
	(0.0271)		(0.0299)		(0.0299)		(0.0298)		(0.0322)		(0.032)	
l_lt_fitch		0.0041		-0.0097		-0.0407		-0.0393		-0.0155		-0.0106
		(0.029)		(0.0264)		(0.0322)		(0.0316)		(0.036)		(0.0349)
lgdpcapita	0.3512	0.3508			0.1002	0.0961			0.4077	0.3971		
	(0.2682)	(0.2675)			(0.2284)	(0.2298)			(0.2204)	(0.2204)		
unem			-0.0299	-0.0307			-0.0278	-0.0285			-0.0042	-0.0049
			-0.0169	-0.0157			(0.0129)*	(0.0127)*			-0.0129	-0.0127
inflation	-0.0112	-0.0113	-0.0152	-0.0146	-0.01216	-0.0109	-0.0090	-0.0074	-0.0094	-0.0087	-0.0014	-0.0010
	(0.0111)	(0.0109)	(0.0094)	(0.0096)	(0.0104)	(0.0106)	(0.0085)	(0.0085)	(0.0101)	(0.0106)	(0.0085)	(0.0086)
gdpgrowth	0.0159	0.0155	0.0161	0.0171	0.0111	0.0125	0.0115	0.0130	-0.0018	-0.0010	0.0047	0.0053
	(0.0078)*	(0.0084)	(0.0101)	(0.01)	(0.0063)	(0.0064)*	(0.0061)	(0.0056)*	(0.0077)	(0.0074)	(0.0077)	(0.0072)
Observations	156366	156366	188733	188733	156366	156366	188733	188733	156366	156366	188733	188733
PseudoR-squared	0.1435	0.1435	0.1472	0.1472	0.1435	0.1435	0.1472	0.1472	0.1435	0.1435	0.1472	0.1472
ll	-1.53E+05	-1.53E+05	-1.84E+05	-1.84E+05	-1.53E+05	-1.53E+05	-1.84E+05	-1.84E+05	-1.53E+05	-1.53E+05	-1.84E+05	-1.84E+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users , youth_unem, le, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

Table 7. Life satisfaction – relativeness – Gologit

Variable	LS> 1 vs. LS≤1				LS>2 vs. LS≤2				LS>3 vs. LS≤3			
	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT
fitchF_avg		0.03077 (0.0160)		0.04275 (0.0131)**		0.03077 (0.0160)		0.04275 (0.0131)**		0.03077 (0.0160)		0.04275 (0.0131)**
fitchL_avg	0.04566 (0.0171)**		0.05300 (0.0149)***		0.04566 (0.0171)**		0.05300 (0.0149)***		0.04566 (0.0171)**		0.05300 (0.0149)***	
f_lt_fitch		0.04417 (0.0182)*		0.02759 (0.0209)		0.03448 (0.0166)*		0.03206 (0.0154)*		0.02374 (0.0193)		0.04404 (0.0185)*
l_lt_fitch	0.02901 (0.0168)		0.03085 (0.0158)		0.02901 (0.0168)		0.03085 (0.0158)		0.02901 (0.0168)		0.03085 (0.0158)	
lgdpcapita	0.4148 (0.2526)	0.4250 (0.2448)			0.4440 (0.2538)	0.4787 (0.2611)			0.3361 (0.3070)	0.3858 (0.3220)		
unem			−0.03922 (0.0149)**	−0.04227 (0.0169)*			−0.02645 (0.0108)*	−0.02800 (0.0107)**			0.0006396 (0.0111)	0.002962 (0.0112)
inflation	0.01699 (0.0130)	0.01775 (0.0135)	0.001743 (0.0150)	0.001194 (0.0160)	0.001767 (0.0090)	0.002042 (0.0094)	−0.007013 (0.0094)	−0.006904 (0.0099)	−0.006906 (0.0074)	−0.006502 (0.0074)	−0.003431 (0.0079)	−0.001628 (0.0078)
gdpgrowth	0.005136 (0.0085)	0.001858 (0.0082)	0.004287 (0.0087)	0.003123 (0.0085)	0.003428 (0.0078)	0.001457 (0.0082)	0.002831 (0.0081)	0.001372 (0.0086)	−0.001021 (0.0090)	−0.001879 (0.0095)	0.002293 (0.0090)	0.0005623 (0.0095)
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696
Pseudo R-squared	0.1445	0.1444	0.1436	0.1435	0.1445	0.1444	0.1436	0.1435	0.1445	0.1444	0.1436	0.1435
ll	−2.31e+05	−2.31e+05	−2.25e+05	−2.25e+05	−2.31e+05	−2.31e+05	−2.25e+05	−2.25e+05	−2.31e+05	−2.31e+05	−2.25e+05	−2.25e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users , youth_unem, le, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

1.6 Discussion

Based on our benchmark model in **Table 5**, we obtain that an increase in Fitch ratings is associated with the likelihood of individuals reporting higher scores on LS scale rather than lower ones. The sovereign rating coefficients are approximately 0.037075 for sovereign ratings when using the foreign currency Fitch rating (first row in **Table 5**), and 0.03613 when using the local currency Fitch rating (second row in **Table 5**). However, looking at panels 2 and 3 in the same table, we observe that the likelihood of reporting higher scores decreases[5] when controlling for GDP per capita (columns labelled 'B: GDP-FLT') and increases when controlling for unemployment[6] (columns labelled 'D: Unem-FLT').

Moreover, the diff-in-diff estimation's results in **Table 6** show that, after 2007, when the economic crisis started, people reported lower scores on the LS scale in the countries where the sovereign ratings had been changed compared to those living in countries with constant SR. The diff-in-diff estimators show that individuals are more likely to report a lower score than 4 ('Very Satisfied') by about 0.2354 and, respectively, 0.2424 in countries where Fitch ratings had changed compared to people in countries where the ratings had not changed, even when controlling for the economic crisis period (columns labelled 'A: GDP-LLT' and 'B: GDP-FLT', first row, third panel of **Table 6**). This conclusion is strengthened by the coefficients of *chg_SR* (second row); these coefficients compare the scores reported by individuals in the two groups of countries. When statistically significant, these estimated coefficients are negative, meaning that where sovereign ratings had changed, people are less likely to report higher scores when compared to those living in countries with constant ratings for almost a decade.

We have also tested for the effects of the sovereign ratings of the neighbouring countries on the LS of the individuals in a country. The results of this analysis are presented in Table 7. The coefficients corresponding to the averages of the Fitch ratings (both on local and foreign currency) on each group (excluding the country *j*) are all positive and statistically significant with few exceptions (foreign currency Fitch rating when controlling for GDP per capita – columns labelled 'B: GDP-FLT'). An increase in the ratings of the neighbouring countries is associated with the likelihood of reporting higher LS scores by individuals in country *j* of approximately 0.04933 (local currency Fitch) and 0.03676 (foreign currency Fitch).

Consistent with the existing literature, we obtain the expected coefficients estimated for unemployment and GDP per capita: the former is associated with lower scores of LS (see **Table 5**, row 4), whereas GDP per capita increases are associated with higher scores (**Table 5**, row 3). We obtain similar results with the personal characteristics as well. However, contrary to existing research, we do not obtain statistically significant coefficients for GDP growth and inflation rate, with a few exceptions.

The most important finding of this chapter is the significant and positive association between sovereign ratings and higher scores of LS, controlling for other macroeconomic variables and

[5] We discuss the results for foreign currency Fitch rating, as the rating on local currency is constrained
[6] In all of our estimations, the coefficients of sovereign ratings are higher when controlling for unemployment than when controlling for GDP per capita (logs)

personal characteristics. Equally significant, we have the confirmation that certain variables, Fitch ratings including, are associated with different coefficients of reporting one score of LS over another. Also, our diff-in-diff results show that after 2007, people in countries for which the sovereign ratings had been downgraded report lower scores. Moreover, we obtain some evidence that people are more likely to report higher LS if the other countries in the region perform better.

1.7 Robustness checks

The existing literature estimates wellbeing using OLS or Ordered Logit/Probit models. As a robustness check we run our specifications using these models as well and we present the results below. We present the results of these estimations after the results chapter, so we can make a comparison with Gologit estimations' results.

1.7.1 OLS estimation

Table 8 presents the estimation of our benchmark model estimated with OLS. Fitch ratings retain their sign and significance. Unemployment is the only significant macroeconomic variable and is negative in this estimation as well. GDP per capita (logs) and GDP growth rate determine positive odds, while inflation rate has negative coefficients in the models with unemployment.

Table 8. Life satisfaction estimation – OLS

Variable	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
f_lt_fitch		0.01490		0.01563
		(0.0069)*		(0.0070)*
l_lt_fitch	0.01475		0.01489	
	(0.0070)*		(0.0073)	
lgdpcapita	0.1896	0.1963		
	(0.0965)	(0.0978)		
unem			−0.009939	−0.009517
			(0.0042)*	(0.0040)*
inflation	0.00007941	0.0003146	−0.001473	−0.001202
	(0.0036)	(0.0037)	(0.0037)	(0.0037)
gdpgrowth	0.0006587	0.0002594	0.001517	0.001120
	(0.0032)	(0.0034)	(0.0033)	(0.0035)
Observations	234067	234067	228696	228696
Pseudo R-squared	0.2597	0.2597	0.2575	0.2575
ll	−2.45e+05	−2.45e+05	−2.39e+05	−2.39e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users , youth_unem, urban_pop, inflation, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

1.7.2 Ordered Logit estimation

The following table presents the Ordered Logit estimation results of the same model. Results are consistent with the Gologit ones (**Table 5**). Fitch ratings are significant and positive, whereas unemployment and inflation determine negative odds. GDP per capita (logs) is still positive, while growth rate has conflicting results depending on the specification. However, it is insignificant in all cases. Moreover, the coefficients obtained here are closer to the ones obtained in Gologit estimations (**Table 5**).

Table 9. Life satisfaction estimation – Ologit

Variable	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
f_lt_fitch		0.04109		0.04506
		(0.0176)*		(0.0189)*
l_lt_fitch	0.04173		0.04101	
	(0.0183)*		(0.0192)*	
lgdpcapita	0.5179	0.5378		
	(0.2673)	(0.2729)*		
unem			−0.02734	−0.02532
			(0.0110)*	(0.0110)*
inflation	0.0005829	0.001181	−0.003932	−0.004755
	(0.0100)	(0.0101)	(0.0101)	(0.0092)
gdpgrowth	−0.0003731	−0.001287	0.002544	0.0004057
	(0.0087)	(0.0091)	(0.0089)	(0.0092)
Observations	234067	234067	228696	228696
Pseudo R-squared	0.1320	0.1320	0.1314	0.1314
ll	−2.34e+05	−2.34e+05	−2.28e+05	−2.28e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users , youth_unem, le, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

1.8 Alternative specifications

1.8.1 Time trend by country

As an additional robustness check, we control for time trend by country; base category is Austria as countries are ordered alphabetically. Results estimated with the Gologit model for the main controls are presented in **Table 10** (complete results are presented in Appendix 1.11.5). Time trend by country is included below for the same four countries (Denmark, Greece, Italy and the UK) for which LS evolution and Fitch ratings were presented in Section 1.3. Estimations for Denmark are significant in the first panel and suggest that individuals are more likely to report higher LS scores over time, compared to people in Austria. We obtained negative significant coefficients in the second and third panels for Italy and Greece, suggesting that people are less likely to report higher scores over time, in these countries compared with Austria. The estimated coefficients for the UK are not significant in any estimation.

The complete results on time trend by country show that there are differences in likelihood of reporting higher LS scores over time across Europe, with negative estimates for all countries, except for Denmark and Finland.

Table 10. Life satisfaction – time trend by country – Gologit

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
f_lt_fitch		-0.01894		-0.008228		-0.009832		-0.006559		-0.01840		-0.007752
		(0.0199)		(0.0226)		(0.0171)		(0.0150)		(0.0172)		(0.0161)
l_lt_fitch	-0.01559		0.0004284		-0.01668		-0.01012		-0.02498		-0.01229	
	(0.0236)		(0.0269)		(0.0180)		(0.0161)		(0.0204)		(0.0191)	
unem			-0.03680*	-0.03859*			-0.03846***	-0.03810***			-0.01069	-0.01008
			(0.0160)	(0.0164)			(0.0105)	(0.0106)			(0.0175)	(0.0176)
lgdpcapita	1.1669*	1.1539*			0.6496	0.6098			0.7242+	0.6919+		
	(0.5489)	(0.5396)			(0.4164)	(0.4063)			(0.4143)	(0.4015)		
gdpgrowth	0.01934	0.02012	0.02185	0.02285	0.01259+	0.01222+	0.01397*	0.01375+	-0.002037	-0.001949	0.001732	0.001577
	(0.0149)	(0.0151)	(0.0162)	(0.0165)	(0.0065)	(0.0068)	(0.0070)	(0.0073)	(0.0063)	(0.0067)	(0.0064)	(0.0067)
inflation	-0.006572	-0.006689	0.001294	0.001096	-0.006584	-0.006340	-0.002632	-0.002627	-0.002366	-0.001942	0.0001307	0.0003731
	(0.0072)	(0.0073)	(0.0074)	(0.0073)	(0.0072)	(0.0072)	(0.0062)	(0.0062)	(0.0093)	(0.0093)	(0.0082)	(0.0083)
*Denmark*time*	0.2162***	0.2166***	0.2188***	0.2161***	0.01813	0.02016	0.02765	0.02849	0.03397	0.03636+	0.02598	0.02691
	(0.0266)	(0.0256)	(0.0363)	(0.0353)	(0.0233)	(0.0237)	(0.0279)	(0.0277)	(0.0212)	(0.0214)	(0.0183)	(0.0183)
*Greece*time*	-0.1396+	-0.1393*	-0.1028	-0.1124	-0.1633*	-0.1529*	-0.1298*	-0.1241*	-0.2133***	-0.2041***	-0.1823***	-0.1764***
	(0.0713)	(0.0705)	(0.0798)	(0.0770)	(0.0637)	(0.0600)	(0.0596)	(0.0567)	(0.0569)	(0.0532)	(0.0507)	(0.0473)
*Italy*time*	-0.04250	-0.03952	-0.04039	-0.04367	-0.1023*	-0.09613*	-0.08877*	-0.08524*	-0.1782***	-0.1712***	-0.1689***	-0.1647***
	(0.0520)	(0.0535)	(0.0659)	(0.0652)	(0.0419)	(0.0402)	(0.0416)	(0.0398)	(0.0405)	(0.0380)	(0.0388)	(0.0355)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
*UK*time*	0.1179+	0.1219+	0.07201	0.07457	0.06334+	0.06460+	0.05632	0.05773	-0.002156	0.001184	-0.008403	-0.006318
	(0.0615)	(0.0630)	(0.0674)	(0.0676)	(0.0379)	(0.0389)	(0.0409)	(0.0412)	(0.0319)	(0.0321)	(0.0307)	(0.0297)
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696
Pseudo R-squared	0.1466	0.1466	0.1454	0.1454	0.1466	0.1466	0.1454	0.1454	0.1466	0.1466	0.1454	0.1454
ll	-2.30e+05	-2.30e+05	-2.24e+05	-2.24e+05	-2.30e+05	-2.30e+05	-2.24e+05	-2.24e+05	-2.30e+05	-2.30e+05	-2.24e+05	-2.24e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users, youth_unem, le, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

1.8.2 Governmental debt

Governmental debt is considered a major determinant of sovereign ratings. As such, we run an estimation controlling for debt (instead of Fitch SR) and all macro determinants from our analysis. According to recent research, debt determines a nonlinear function, its impact increasing after a certain level. Belhocine and Dell'Erba (2013) prove that a sigmoidal function of debt is more realistic than a dichotomous variable – an idea also researched and sustained by Lagi and Bar-Yam (2012) and Cantore, Levine, Melina and Pearlman. (2015). Following this research, we determine a sigmoidal function adapted to our data, by adjusting the parameters of the function such that we obtain the following function of debt:

$$debt = \frac{1}{1 + \exp(-18 + 20 * gov_{debt})}$$

Table 11. Life satisfaction estimation – debt – Gologit

Variable	LS>1 vs. LS≤1	LS>2 vs. LS≤2	LS>3 vs. LS≤3
	Debt	Debt	Debt
debt	−0.2109	−0.1146	−0.1047
	(0.2247)	(0.2129)	(0.1469)
lgdpcapita	0.6086	0.7223	0.5546
	(0.3133)	(0.3212)*	(0.3469)
unem	−0.04784	−0.03454	−0.01532
	(0.0140)***	(0.0103)***	(0.0107)
inflation	−0.003137	−0.01177	−0.006887
	(0.0137)	(0.0083)	(0.0073)
gdpgrowth	0.01233	0.008853	−0.0002590
	(0.0097)	(0.0070)	(0.0081)
Observations	232881	232881	232881
Pseudo R-squared	0.1418	0.1418	0.1418
ll	−2.30e+05	−2.30e+05	−2.30e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, personal characteristics, openness, internet_users, youth_unem, le, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

From our results we observe that debt is not significant in any estimation (though we obtain the expected sign – the higher the debt, the more likely individuals are to report lower scores of LS). Unemployment remains negative and statistically significant, whereas GDP per capita (logs) is positive but significant only in the second panel [7].

Overall, the results presented in this section are robust to alternative estimation methods, though not to the inclusion of the time trend by country. On the other hand, controlling for time trend involves a high collinearity in the model such that the model could not be estimated with Generalised Ologit when the time trend by country is included.

1.8.3 Fitch residuals

As sovereign ratings are aggregated indicators related to macro indicators, endogeneity might be suspected. To control for this, we regress Fitch ratings on the relevant macro variables (GDP per capita, unemployment, GDP growth, inflation, governmental debt, openness, FDI, Fitch outlook and interest rate) and obtain the residuals, as these will only encompass the marginal

[7] We expect to obtain statistically insignificant coefficients for GDP per capita (logs) as previously mentioned; when controlling for both GDP per capita and unemployment, the former is not significant

impact of sovereign ratings beyond the macro indicators. We then estimate the benchmark model of LS using the residuals from this regression. We present the results from this estimation in **Table 12** below. We observe that the coefficients of the residuals (first two columns in **Table 12**) are still significant and positive. Moreover, the coefficients are very close to the ones in **Table 5**.

Table 12. Fitch residuals - Gologit

Variable	LS>1 vs. LS≤1				LS>2 vs. LS≤2				LS>3 vs. LS≤3			
	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-FLT	C:Unem-LLT	D:Unem-FLT
fitch_f_hat		0.03871		0.01464		0.03415		0.01657		0.04091		0.0436
		(0.0180)*		(0.0190)		(0.0169)*		(0.0208)		(0.0201)*		(0.0183)*
fitch_l_hat	0.03695		0.02563		0.03695		0.02563		0.03695		0.02563	
	(0.0152)*		(0.0180)		(0.0152)*		(0.0180)		(0.0152)*		(0.0180)	
lgdpcapita	0.8019	0.7097			0.7628	0.7283			0.4973	0.6291		
	(0.2198)***	(0.2517)***			(0.2393)***	(0.2405)***			(0.2533)*	(0.2760)*		
unem			-0.05042	-0.05491			-0.04025	-0.04118			-0.01414	-0.00977
			(0.0149)***	(0.0156)***			(0.0112)***	(0.0116)***			(0.0125)	(0.0122)
inflation	0.002308	0.01614	-0.005201	-0.00464	-0.00356	0.000629	-0.00825	-0.01259	0.001691	-0.00697	-0.00158	-0.00498
	(0.0118)	(0.0139)	(0.0131)	(0.0157)	(0.0105)	(0.0097)	(0.0109)	(0.0102)	(0.0088)	(0.0071)	(0.0079)	(0.0075)
gdpgrowth	0.008592	0.007586	0.008576	0.006831	0.006301	0.00597	0.006953	0.00515	0.002415	0.001908	0.006674	0.006046
	(0.0081)	(0.0082)	(0.0089)	(0.0089)	(0.0070)	(0.0073)	(0.0077)	(0.008)	(0.0084)	(0.0087)	(0.0085)	(0.0087)
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696
Pseudo R-squared	0.1445	0.1444	0.1434	0.1434	0.1445	0.1444	0.1434	0.1434	0.1445	0.1444	0.1434	0.1434
ll	-231000	-231000	-225000	-225000	-231000	-231000	-225000	-225000	-231000	-231000	-225000	-225000

Standard errors in parentheses. Note: control variables: country dummies, time dummies, openness, internet_users, le, youth_unem, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01.

1.9 Conclusions

This chapter analysed the determinants of life satisfaction, as a proxy of individuals wellbeing, including both individual characteristics and macroeconomic variables. The context of this analysis is the last economic crisis and testing whether sovereign ratings had an effect on determining people's wellbeing beyond the impact of personal characteristics and the commonly used macroeconomic indicators. The estimation method implemented is the Partial Proportional Odds (PPO) model, which allows us to identify if some of the control variables have a different effect on the categories of the dichotomous dependent variable. We obtain that some of the control variables, including sovereign ratings, have different estimates across the life satisfaction categories.

In line with existing literature, we find that unemployment and GDP per capita, along with personal characteristics, are among the most important determinants of individual wellbeing. However, in this chapter we include a novel determinant – sovereign ratings. Sovereign ratings are an indicator that incorporates more factors at the national level, and represents a tag attached to a country, that has become of more interest to individuals since the onset of the recession. Sovereign ratings are recognised as a forward-looking variable on how the country is going to perform macro-economically; with the added value that these ratings are perceived as an objective assessment by independent rating agencies.

The evidence presented in this chapter shows that sovereign ratings changes during the last recession were *directly* associated with changes in individual reported wellbeing beyond the changes in macroeconomic conditions that the ratings reflect (and for which we control) and beyond individual personal circumstances. Thus, after 2007, individuals reported lower scores of life satisfaction in those countries where Fitch ratings had been downgraded. This finding is novel and warrants a further exploration of the mechanisms at work. It nevertheless suggests that Fitch ratings' changes may have affected individual wellbeing through the psychological consequences of perceiving a worsened scenario for one owns country in terms of the economic and social environment. Our results are robust to several tests.

There are a few important findings worth reflecting on as a result of our analysis. Firstly, more factors should be included when analysing individual wellbeing, beyond personal characteristics and the traditional macroeconomic indicators, such as GDP and unemployment. As already mentioned, a country's performance is not determined only by these factors, and credit ratings agencies take into account a myriad of factors that are more reflective of a nation's performance. Including sovereign ratings amongst determinants of wellbeing might provide a more general view of the impact macro indicators have on this indicator, even more so in the context of the last recession.

We also obtain that countries have distinctive preferences over life satisfaction ratings, i.e. different thresholds between self-assessed wellbeing categories, highlighting that across the 28 European countries analysed, people have different scales on what defines each category of life satisfaction. Furthermore, we obtain evidence that peers' performance positively affects

individuals' wellbeing; better performing neighbouring countries (in terms of sovereign ratings) is associated with increased wellbeing reported by individuals.

Lastly, we observe that after 2010, there is a recovery in reported life satisfaction, although objective economic indicators remained unchanged. We infer here that people adapted to the harsh economic conditions they were facing.

Our analysis has several limitations. It would be beneficial to analyse the impact of the macro indicators and sovereign ratings using lagged variables; however, this was not possible with the employed empirical methodology, unless done manually. Also, we acknowledge the limitations of employing a pooled cross-sectional data compared to a panel series. More controls reflective of the economic performance (such as interest rate) could be also included. The sovereign ratings could be endogenous and we could have attempted to correct for this issue and include IV estimation in our main analysis. However, we implemented one method to correct for possible endogeneity (including sovereign residuals – please see section 1.8.3) and the results obtained are very close to our main results and indicate the same impact on wellbeing.

Our analysis can be extended and replicated on a panel series if data on a wellbeing measure is available. Further research could be done as more time has passed since the onset of the recession and this provides the opportunity to analyse the effects of government actions and economic consequences in the aftermath of the recession, on individual wellbeing. Such an analysis would be interesting as to observe whether individuals retain their recovery in wellbeing reported (which we interpreted as adaptation) even after austere measures taken in some countries and macroeconomic consequences. According to the results obtained in Parker et al. 2016, although youngster increased their wellbeing levels after a drop in 2009 following the economic crisis, a further decrease was registered in the next three years, most likely due to rising unemployment rates.

1.10 References

1. Blanchflower, D. G., Oswald, A. J. (2004a) 'Money, sex and happiness: an empirical study', *Scandinavian Journal of Economics*, Vol. 106, No. 3, pp. 393–415.
2. Blanchflower, D. G., Oswald, A. J. (2004b) 'Wellbeing over time in Britain and the USA', *Journal of Public Economics*, Vol. 88, pp. 1359–1386.
3. Boes, S., Winkelmann, R. (2004) 'Income and happiness: new results from generalized threshold and sequential models', IZA Discussion Paper, No. 1175.
4. Borra, C., Gómez-García, F. (2014) 'Wellbeing at work and the Great Recession: The effect of others' unemployment', *En XXI Encuentro Economía Pública*, Girona.
5. Bruening, M., MacLehose, R., Loth, K., Story, M., Neumark-Sztainer, D. (2012) 'Feeding a family in a recession: Food insecurity among Minnesota parents', *American Journal of Public Health*, Vol. 102, No. 3, pp. 520–526.
6. Clark, A. E., Oswald, A. J. (1994) 'Unhappiness and unemployment', *The Economic Journal*, Vol. 104, No. 424, pp. 648–659.
7. Clogg, C. C., Shihadeh, E. S. (1994), 'Statistical models for ordinal variables', Sage Publications, Inc., Vol. 4.
8. Cubi-Molla, P., Herrero, C. (2012), 'Quality of life lost due to non-fatal road traffic injuries', *Health Economics*, Vol. 21, pp. 528–550.Dardanoni, V., Li Donni, P. (2012) 'Reporting heterogeneity in health: an extended latent class approach', *Applied Economics Letters*, Vol. 19, pp. 1129–1133.
9. Deaton, A. (2012) 'The financial crisis and the wellbeing of Americans', *Oxford Economic Papers*, Vol. 64, pp. 1–26.
10. Delaney, L. (2009) 'Wellbeing under conditions of abundance: Ireland from 1990–2007', *Journal of Statistical and Social Inquiry Society of Ireland*, Vol. 38, pp. 205–219.
11. Diener, E., Diener, M., Diener, C. (2009) 'Factors predicting the subjective wellbeing of nations', *Social Indicators Research Series*, Vol. 38, pp. 43–70.
12. DiTella, R., MacCulloch, R., Oswald, A. (2003) 'The macroeconomics of happiness', *The Review of Economics and Statistics*, Vol. 85, No. 4, pp. 809–827.
13. Dreibelbis, S., Breazeale, J. (2012) 'Rating The analysis in the current recession: A review of Moody's and Standard and Poor's', *Academy of Banking Studies Journal*, Vol. 11, No. 1, pp. 55–71.
14. Easterlin, R.A. (1974) 'Does economic growth improve the human lot? Some empirical evidence.' In *Nations and Households in Economic Growth: Essays in Honor of Moses Abramowitz*, ed. David, P. A. (Academic Reder, MS), pp. 89–125.
15. Easterlin, R. (2006) 'Life cycle happiness and its sources: Intersections of psychology, economics and demography', *Journal of Economic Psychology*, Vol. 27, pp. 463–482.
16. Easterlin, R. A., McVey, L. A., Switek, M., Sawangfa, O., Zweig, J. S. (2010) 'The happiness–income paradox revisited', *PNAS*, Vol. 107, No. 52, pp. 22463–22468.
17. Evans, M. D. R., Kelley, J., Kelley, S. M. C., Kelley, C. G. E. (2017) 'Rising Income Inequality During the Great Recession Had No Impact on Subjective Wellbeing in Europe, 2003–2012', *J Happiness Stud*, https://doi.org/10.1007/s10902-017-9917-3

18. Fernandez-Dols, J. M., Ruiz-Belda, M. A. (1995) 'Are smiles a sign of happiness? Gold medal winners at the Olympic Games', *Journal of Personality and Social Psychology*, Vol. 69, pp. 1113–1119.
19. Ferrer-i-Carbonell, A. (2002) 'Subjective questions to measure welfare and wellbeing', Tinbergen Institute Discussion Paper, No. 02–020/3.
20. Ferrer-i-Carbonell, A., Frijters, P. (2004) 'How important is methodology for the estimates of the determinants of happiness?', *The Economic Journal*, Vol. 114, No. 497 July 2004, pp. 641–659.
21. Ferrer-i-Carbonell, A., Gowdy, J. M. (2007) 'Environmental degradation and happiness', *Ecological Economics*, Vol. 60, No. 3, pp. 509–516.
22. Gudmundsdottir, D. G. (2013) 'The impact of economic crisis on happiness', *Social Indicators Research*, Vol. 110, pp. 1083–1101.
23. Hernandez-Quevedo, C., Jones, A. M., Rice, N. (2005) 'Reporting bias and heterogeneity in self-assessed health. Evidence from the British Household Panel Survey', HEDG Working Paper 05/04.
24. Hiswåls, A-S., Marttila, A., Mälstam, E., Macassa, G. (2017) 'Experiences of unemployment and well-being after job loss during economic recession: Results of a qualitative study in east central Sweden', *Journal of Public Health Research*, Vol. 6:995.
25. Kahneman, D., Diener, E., Schwarz, N. (eds.) (1999) 'Foundations of hedonic psychology: scientific perspectives on enjoyment and suffering', New York: Russell Sage Foundation.
26. Kahneman, D., Krueger, A. B. (2006) 'Developments in the measurement of subjective wellbeing', *Journal of Economic Perspectives*, Vol. 20, No. 1, pp. 3–24.
27. Kahneman, D., Deaton, A. (2010) 'High income improves evaluation of life but not emotional wellbeing', *PNAS*, vol. 107 no. 38, pp. 16489–16493.
28. Kaminksy, G., Schmukler, S. (2002) 'Emerging market instability: do sovereign ratings affect country risk and stock returns?', *World Bank Economic Review*, Vol. 16, No. 2, pp. 171–195.
29. Khedhiri, S., Stambouli, N., Ouerhani, S., Rouissi, K., Marrakchi, R., Gaaied, A. B., & Slama, M. B. (2010) 'The impact of smoking and polymorphic enzymes of xenobiotic metabolism on the stage of bladder tumors: a generalized ordered logistic regression analysis', *Journal of Cancer Research and Clinical Oncology*, Vol. 136, No. 7, pp. 1111–1116.
30. Kim, S., Wu, E. (2008) 'Sovereign credit ratings, capital flows and financial sector development in emerging markets', *Emerging Markets Review*, Vol. 9, pp. 17–39.
31. Kudlyak, M., Schwartzman, F. (2012) 'Accounting for unemployment in the Great Recession: Nonparticipation matters', Federal Reserve Bank of Richmond Working Paper No. 12-04.
32. Latif, E. (2010) 'Crisis, unemployment and psychological wellbeing in Canada', *Journal of Policy Modeling*, Vol. 32, pp. 520–530.

33. Layard, R. (2003) 'Happiness: has social science a clue?' Lionel Robbins Memorial Lectures, London School of Economics.
34. Mohseni-Cheraghlou, A. (2016) 'The Aftermath of Financial Crises: A Look on Human and Social Wellbeing', *World Development*, Vol. 87, pp. 88–106.
35. Oswald, A. J. (1997) 'Happiness and economic performance', *The Economic Journal*, Vol. 107, pp. 1815–1831.
36. Parker, P. D., Jerrim, J., Anders, J. (2016) 'What Effect Did the Global Financial Crisis Have Upon Youth Wellbeing? Evidence From Four Australian Cohorts', *Developmental Psychology*, Vol. 52, No. 4, pp. 640-651.
37. Ratcliffe, A., Taylor, K. (2015) 'Who cares about stock market booms and busts? Evidence on data on mental health', *Oxford Economic Papers*, Vol. 67, No. 3, pp. 826–845.
38. Ruhm, C. (1996) 'Are recessions good for your health?' NBER Working Paper 5570.
39. Sandvik, E., Diener, E., Seidlitz, L. (1993) 'Subjective wellbeing: the convergence and stability of self and non self-report measures', *Journal of Personality*, Vol. 61, pp. 317–342.
40. Shizgal, P. (1999) 'On the neutral computation of utility: implications from studies of brain simulation reward', in Kahneman et al. (1999), chapter 26.
41. Simona-Moussa, J., Ravazzini, L. (2018) 'From One Recession to Another: Longitudinal Impacts on the Quality of Life of Vulnerable Groups', *Social Indicators Research*, https://doi.org/10.1007/s11205-018-1957-5
42. Stevenson, B., Wolfers, J. (2008) 'Economic growth and subjective wellbeing: reassessing the Easterlin paradox', NBER Working Paper No. 14282, August 2008, JEL No. D6, I3, J1.
43. Stiglitz, J. E., Sen, A., Fitoussi, J. -P. (2009) 'The measurement of economic performance and social progress revisited', Columbia University, IEP, OFCE Working Paper.
44. Stutzer, A. (2004) 'The role of income aspirations in individual happiness', *Journal of Economic Behaviour and Organisation*, Vol. 54, pp. 89–109.
45. Theodossiou, I. (1998) 'The effects of low pay and unemployment on psychological wellbeing: a logistic regression approach', *Journal of Health Economics*, Vol. 17, pp. 85–104.
46. Van Doorslaer, E., Jones, A. M. (2003) 'Inequalities in self-reported health: validation of a new approach to measurement', *Journal of Health Economics*, Vol. 22, pp. 61–87.
47. Walsh, B. (2012) 'Adjusting to the crisis: wellbeing and economic conditions in Ireland', *International Journal of Happiness and Development*, Vol. 1, No. 1, pp.28–48.
48. Welsch, H. (2007) 'Macroeconomics and life satisfaction: revisiting the <Misery Index>', *Journal of Applied Economics*, Vol. 10, No. 2, pp. 237–251.
49. Williams, R. (2006) 'Generalized ordered logit/partial proportional odds models for ordinal dependent variables', *The Stata Journal*, Vol. 6, Number 1, pp. 58–82.

50. Winkelmann, L., Winkelmann, R. (1998) 'Why are the unemployed so unhappy? Evidence from panel data', Economica, Vol. 65, pp. 1–15.
51. 'Credit ratings: how Fitch, Moody's and S&P rate each country', The Guardian, October 12, 2012. Retrieved from: http://www.guardian.co.uk/news/datablog/2010/apr/30/credit-ratings-country-fitch-moodys-standard
52. 'Moody's downgrades French credit rating', BBC News, November 19, 2012. Retrieved from: http://www.bbc.co.uk/news/business-20404381
53. Mahoney, Christopher T., 'Moody's will downgrade the UK and the US', December 8, 2012. Retrieved from: http://www.project-syndicate.org/blog/moody-s-will-downgrade-the-uk-and-the-us-by-christopher-t--mahoney#t0fDVIK1vb26G5sW.99

1.11 Appendices

1.11.1 Fitch sovereign ratings

There are ten possible ratings that can be allocated to long-term financial obligations. Modifiers (+,-) can be appended to some of the ratings (all from AA to B, inclusive), totalling to twenty ratings possible. Ratings are awarded based on the vulnerability of the issues to default. Modifiers denote a relative status within category (positive or negative compared to main category).

Table 13. National long-term ratings

Ratings	Risk of default
AAA	Highest rating assigned to countries with the lowest risk of default
AA	Very high credit quality
A	High credit quality
BBB	Good credit quality
BB	Speculative (vulnerable to default)
B	Highly speculative
CCC	Substantial credit risk
CC	Very high level of credit risk
C	Near default
RD/D	Restricted default/default

Source: Fitch Ratings Definitions, 2018 (available at: https://www.fitchratings.com/site/definitions)

1.11.2 Complete Brant test results

Model A: GDP – LLT

Table 14. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	chi2	p>chi2	df
All				7443.52	0	142
l_lt_fitch	0.01614397	0.02953757	0.05479336	11.89	0.003	2
Age	-0.07773055	-0.07828665	-0.06783989	14.79	0.001	2
Age²	0.00071544	0.00074817	0.00065588	11.93	0.003	2
Education	0.31542415	0.28893245	0.19257287	83.29	0	2
Female	-0.12786161	-0.07974015	-0.07931295	6.54	0.038	2
Student	0.2391132	0.16886757	0.04657601	8.1	0.017	2
Unemployed	-0.7270092	-0.80018464	-0.59802637	31.32	0	2
Retired	-0.09229399	-0.0798757	-0.01534684	4.76	0.093	2
Farmer	0.05196076	-0.03032673	-0.08297903	2.86	0.239	2
Fisherman	-0.08668347	0.1047908	-0.29405694	1.54	0.462	2
Professional (lawyer, etc.)	0.53303391	0.44960024	0.40815843	1.13	0.568	2
Owner of a shop, craftmen etc	0.31693374	0.2718583	0.04876865	24.94	0	2
Business proprietors	0.59513541	0.63421839	0.37203776	17.94	0	2
Employed professional	0.64251731	0.39030129	0.04355689	191.46	0	2
General management	1.1344072	1.0949119	0.64631312	24.45	0	2
Middle management	0.93182722	0.74059411	0.22258131	170.6	0	2
Supervisor	0.60068803	0.39385505	0.00656687	27.1	0	2
Skilled manual worker	0.25608831	0.05847285	-0.15756258	67.89	0	2
Unskilled manual worker	-0.1393698	-0.2715036	-0.32332963	9.73	0.008	2
child15	-0.04500636	-0.01418256	0.01315621	15.43	0	2
Unmarried	-0.4046671	-0.34006254	-0.37163971	6.82	0.033	2
Divorced / Separated	-0.81967753	-0.76171953	-0.6886012	12.11	0.002	2
Widowed	-0.52675056	-0.54569497	-0.62405251	8.98	0.011	2
Other	-0.42314308	-0.25883853	-0.26505106	2.14	0.343	2
Refusal	-0.60388112	-0.40924179	-0.35148384	2.56	0.279	2
LGDPcapita	0.46960917	0.55437942	0.35993737	3.62	0.163	2
GDPgrowth	0.02260715	0.00158455	-0.01136706	40.64	0	2
Openness	-0.47339243	-0.18923296	0.53347032	44.83	0	2
Internet_users	0.00190821	-0.00352962	-0.00370087	2.18	0.337	2
LE	-0.04521888	-0.04357403	0.02246883	4.94	0.085	2
Youth_unem	-0.01617501	-0.01314851	-0.00301447	20.69	0	2
Urban_pop	-0.05178579	-0.03324152	0.02344352	24.57	0	2
Inflation	-0.00390545	-0.0058963	0.00376777	3.98	0.137	2
Enroll_tertiary_gross	-0.00601337	-0.00750246	-0.00606216	1.14	0.564	2
Old_pop	0.19148804	-0.01498798	0.02259371	17.59	0	2
Young_pop	0.0707074	0.02643123	0.09326093	11.13	0.004	2
2005	-0.0084228	-0.01380082	-0.14217158	15.77	0	2
2006	0.06934823	-0.00454619	-0.15792268	15.2	0.001	2
2007	0.03986234	0.0616379	-0.14805167	12.61	0.002	2
2008	-0.11745833	-0.11429389	-0.26539909	4.24	0.12	2
2009	0.07719987	-0.00268534	-0.25640819	10.83	0.004	2

Variable	y>1	y>2	y>3	chi2	p>chi2	df
2010	-0.10412805	0.12926745	-0.05494128	5.98	0.05	2
2011	-0.05042201	0.18824142	-0.08523461	7.43	0.024	2
2012	0.05930544	0.23837125	-0.13598951	9.73	0.008	2
Belgium	1.3133762	1.6647486	-0.48739932	31.98	0	2
Bulgaria	-1.9484527	-1.165142	-1.0379193	5.35	0.069	2
Croatia	-1.4899341	-0.37637419	0.92630861	66.6	0	2
Cyprus	-0.56317623	-0.82288242	0.39820572	26.57	0	2
Czech	0.59966482	0.34294872	-0.32705152	14.95	0.001	2
Denmark	1.3314409	2.172349	1.4810849	12.53	0.002	2
Estonia	-0.33516579	-0.03521382	-0.53944408	5.89	0.053	2
Finland	1.6060254	1.8136976	0.50544649	39.73	0	2
France	-0.44892259	0.38218064	-0.59732769	23.94	0	2
Germany	-0.90045406	0.34453	0.12264361	28.62	0	2
Greece	-2.0538501	-0.71798098	0.24505759	74.67	0	2
Hungary	-1.28284	-0.82989925	-0.59412083	3.58	0.167	2
Ireland	0.45144019	0.32131214	0.32725932	0.13	0.938	2
Italy	-1.6538984	-0.4553696	-0.49300945	27.29	0	2
Latvia	-1.2052591	-0.48146037	-0.07923358	9.46	0.009	2
Lithuania	-1.0837062	-0.74849143	0.10005613	11.39	0.003	2
Malta	1.8512202	1.1358091	-0.34680229	18.77	0	2
Netherlands	1.2796166	1.5072543	0.53265038	22.91	0	2
Poland	-0.31618053	-0.10216874	0.64891081	7.37	0.025	2
Portugal	-2.3232234	-1.4417267	-1.203536	27.59	0	2
Romania	-2.2284365	-1.6330373	-0.04105222	27.88	0	2
Slovakia	-0.52233619	-0.84958292	-0.11214838	5.56	0.062	2
Slovenia	-0.09809543	0.26944738	0.96896457	10.35	0.006	2
Spain	0.29037586	0.83013089	0.27049124	16.63	0	2
Sweden	1.4851196	2.2004671	0.89439077	36.7	0	2
Turkey	-0.77999211	-0.56515704	0.6754236	6.27	0.043	2
UK	0.2447162	1.0255765	0.67538011	15.45	0	2
Constant	3.5644322	2.6624681	-10.218679			

A significant test statistic provides evidence that the parallel regression assumption has been violated

Model B: GDP – FLT

Table 15. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	chi2	p>chi2	df
All				7432.16	0	142
f_lt_fitch	0.01796609	0.0309551	0.04710599	5.87	0.053	2
Age	-0.07773649	-0.07829676	-0.0678387	14.82	0.001	2
Age²	0.0007155	0.00074828	0.00065592	11.95	0.003	2
Education	0.31548405	0.28904091	0.19272069	83.21	0	2
Female	-0.12781904	-0.0796495	-0.07926717	6.55	0.038	2
Student	0.23916001	0.16882666	0.04637649	8.12	0.017	2
Unemployed	-0.72678831	-0.79999174	-0.59823904	31.21	0	2
Retired	-0.09228737	-0.08004206	-0.01580964	4.71	0.095	2
Farmer	0.05220501	-0.03004817	-0.08174028	2.83	0.243	2
Fisherman	-0.08746827	0.10360549	-0.29855808	1.56	0.457	2
Professional (lawyer, etc.)	0.53286558	0.44918753	0.40732662	1.15	0.564	2
Owner of a shop, craftmen etc	0.31699506	0.27184564	0.04854622	24.99	0	2
Business proprietors	0.59518489	0.6342033	0.3718583	17.96	0	2
Employed professional	0.64261303	0.39037833	0.04354037	191.55	0	2
General management	1.1345949	1.0951774	0.64674717	24.44	0	2
Middle management	0.93180309	0.74050038	0.22235726	170.69	0	2
Supervisor	0.60070402	0.39385382	0.00698046	27.05	0	2
Skilled manual worker	0.25618417	0.05848893	-0.157444	67.88	0	2
Unskilled manual worker	-0.13935377	-0.27156957	-0.32352209	9.74	0.008	2
Child15	-0.04504776	-0.01424838	0.01304589	15.39	0	2
Unmarried	-0.40469574	-0.34010287	-0.37154675	6.8	0.033	2
Divorced / Separated	-0.81976094	-0.76185074	-0.68875883	12.1	0.002	2
Widowed	-0.52677946	-0.54575153	-0.62411219	8.99	0.011	2
Other	-0.42287091	-0.25880765	-0.26597618	2.13	0.344	2
Refusal	-0.60390755	-0.409498	-0.35233254	2.54	0.28	2
LGDPcapita	0.4764259	0.57148993	0.38590822	3.5	0.174	2
GDPgrowth	0.02189748	0.00056952	-0.01226351	39.64	0	2
Openness	-0.46331015	-0.17769856	0.50576601	40.69	0	2
Internet_users	0.00211067	-0.00341607	-0.00462132	2.59	0.273	2
LE	-0.04690523	-0.04672602	0.02811633	6.28	0.043	2
Youth_unem	-0.01570566	-0.01273119	-0.00409217	15.02	0.001	2
Urban_pop	-0.04835472	-0.02706415	0.03655735	32.38	0	2
Inflation	-0.00347498	-0.00535616	0.00400505	3.71	0.157	2
Enroll_tertiary_gross	-0.00618311	-0.00784127	-0.0066873	1.02	0.602	2
Old_pop	0.19143684	-0.0120607	0.02505679	17.1	0	2
Young_pop	0.07575404	0.03634047	0.11072258	12.57	0.002	2
2005	-0.00930369	-0.01474099	-0.13854198	14.7	0.001	2
2006	0.06790022	-0.00558344	-0.15346486	14.27	0.001	2
2007	0.03529847	0.05392769	-0.15322255	12.41	0.002	2
2008	-0.12488117	-0.12800388	-0.27503487	4.08	0.13	2
2009	0.06509866	-0.02077475	-0.26612202	10.28	0.006	2
2010	-0.11494723	0.11445694	-0.05687827	5.47	0.065	2
2011	-0.06351702	0.17060661	-0.09307916	7.04	0.03	2

Variable	y>1	y>2	y>3	chi2	p>chi2	df
2012	0.04553191	0.21917398	-0.14552169	9.3	0.01	2
Belgium	1.1945286	1.4538406	-0.89055636	39.22	0	2
Bulgaria	-1.922723	-1.1285673	-1.0000364	5.52	0.063	2
Croatia	-1.4207553	-0.26020416	1.1141381	74.43	0	2
Cyprus	-0.56094237	-0.81574221	0.33811934	23.81	0	2
Czech	0.60431663	0.35603936	-0.32240493	15.18	0.001	2
Denmark	1.2454623	2.0215445	1.2072215	14.34	0.001	2
Estonia	-0.33061998	-0.02242995	-0.45887659	4.74	0.094	2
Finland	1.5427425	1.7059507	0.30657603	46.18	0	2
France	-0.51921688	0.25506145	-0.87881848	29.69	0	2
Germany	-0.90647995	0.32159423	0.06911979	28.33	0	2
Greece	-2.0054805	-0.64801688	0.30556355	72.17	0	2
Hungary	-1.2647195	-0.79754424	-0.51554934	4.26	0.119	2
Ireland	0.43750269	0.30929795	0.31988725	0.12	0.939	2
Italy	-1.637717	-0.44120178	-0.53226406	26.88	0	2
Latvia	-1.1788647	-0.43959245	0.0168584	10.78	0.005	2
Lithuania	-1.0615999	-0.70752035	0.2025702	13.21	0.001	2
Malta	1.7672533	0.99048945	-0.68996547	24.61	0	2
Netherlands	1.2114559	1.3936537	0.32604474	27.87	0	2
Poland	-0.26608318	-0.00490259	0.83946293	9.69	0.008	2
Portugal	-2.2850306	-1.381304	-1.1153831	29.9	0	2
Romania	-2.1475488	-1.4955974	0.1723869	31.25	0	2
Slovakia	-0.4816811	-0.75537258	0.13615793	8.19	0.017	2
Slovenia	-0.02145555	0.41054958	1.2511859	15.35	0	2
Spain	0.26324921	0.78710547	0.15750546	19.42	0	2
Sweden	1.4128335	2.0755874	0.66458097	42.34	0	2
Turkey	-0.81777577	-0.63576124	0.4224768	4.6	0.1	2
UK	0.19056885	0.93024132	0.48111904	16.55	0	2
Constant	3.2666911	2.0787586	-11.874942			

A significant test statistic provides evidence that the parallel regression assumption has been violated

Model C: Unem – LLT

Table 16. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	chi2	p>chi2	df
All				6928.36	0	140
l_lt_fitch	0.02832074	0.03722807	0.04632417	2.44	0.296	2
Age	-0.07793635	-0.0774031	-0.06797155	12.04	0.002	2
Age²	0.00071936	0.00073834	0.00065671	8.95	0.011	2
Education	0.32217797	0.29359461	0.19571946	83.65	0	2
Female	-0.13003922	-0.08030713	-0.0824411	6.58	0.037	2
Student	0.21650652	0.15624517	0.05152946	5.7	0.058	2
Unemployed	-0.7348072	-0.81232079	-0.58782515	37.25	0	2
Retired	-0.09847651	-0.08214602	-0.00274963	6.99	0.03	2
Farmer	0.03925986	-0.04172943	-0.06317288	1.9	0.388	2
Fisherman	-0.12136047	0.12808803	-0.2626172	1.69	0.43	2
Professional (lawyer, etc.)	0.57820924	0.47408946	0.43255109	1.41	0.494	2
Owner of a shop, craftmen etc	0.31053546	0.26948014	0.0564822	21.71	0	2
Business proprietors	0.57879669	0.61139919	0.3740763	14.33	0.001	2
Employed professional	0.63567754	0.39465149	0.05995431	170.62	0	2
General management	1.103639	1.0836179	0.66234483	20.59	0	2
Middle management	0.92111659	0.73795516	0.2374135	153.64	0	2
Supervisor	0.60146106	0.40187513	0.0231453	25.11	0	2
Skilled manual worker	0.25648915	0.05877506	-0.1379078	58.5	0	2
Unskilled manual worker	-0.13750939	-0.2690686	-0.30647305	8.44	0.015	2
child15	-0.04170282	-0.01344781	0.01445987	14.19	0.001	2
Unmarried	-0.41405892	-0.35054391	-0.37378317	5.72	0.057	2
Divorced / Separated	-0.83009717	-0.77212498	-0.68312017	15.32	0	2
Widowed	-0.53015605	-0.55032257	-0.62088665	7.31	0.026	2
Other	-0.40342326	-0.24252798	-0.26879436	2.02	0.364	2
Refusal	-0.57912844	-0.41399825	-0.36338162	1.78	0.412	2
Unemployment	-0.0394781	-0.03526649	-0.01129858	26.39	0	2
GDPgrowth	0.02451262	0.00242215	-0.00837488	37.3	0	2
Openness	-0.63849893	-0.29434601	0.42832619	43.82	0	2
Internet_users	0.00422177	-0.00121347	-0.00441407	4.27	0.118	2
LE	0.00525237	0.01831517	0.04131241	0.7	0.705	2
Urban_pop	-0.06291464	-0.04111897	0.00864774	20.53	0	2
Inflation	-0.00974259	-0.00970546	-0.00039276	3.67	0.16	2
Enroll_tertiary_gross	-0.00538862	-0.00681727	-0.00530826	1.12	0.57	2
Old_pop	0.22286232	-0.0005954	0.00640082	18.42	0	2
Young_pop	0.06304411	0.00356876	0.02603196	5.11	0.078	2
2005	0.03833052	0.01552455	-0.08895556	9.72	0.008	2
2006	0.13641747	0.04047027	-0.087143	11.41	0.003	2
2007	0.19033087	0.19311702	-0.02660958	15.21	0	2
2008	0.07399383	0.05065723	-0.10775854	5.4	0.067	2
2009	0.14164102	0.03979238	-0.14850628	6.52	0.038	2
2010	-0.04430609	0.16050542	0.03952577	3.37	0.186	2
2011	0.03214526	0.23592849	0.0376691	4.23	0.121	2
2012	0.09259599	0.23523041	-0.02292594	4.61	0.1	2

Variable	y>1	y>2	y>3	chi2	p>chi2	df
Belgium	1.6977931	1.9667399	0.10227815	24.53	0	2
Bulgaria	-2.3441661	-1.7226476	-1.7279509	3.2	0.202	2
Croatia	-1.9554874	-0.83562238	0.34805664	70.96	0	2
Cyprus	-0.5202026	-0.84446915	0.23690795	20.19	0	2
Czech	0.5311954	0.14384447	-0.61592109	21.35	0	2
Denmark	1.7295599	2.5797629	2.0555145	10.55	0.005	2
Estonia	-0.39067709	-0.16141215	-0.77781384	8.14	0.017	2
Finland	1.7258216	1.9367869	0.82304969	28.91	0	2
France	-0.44652878	0.40416785	-0.25799665	14.62	0.001	2
Germany	-0.97347746	0.29547526	0.12331813	27.86	0	2
Greece	-2.4499681	-1.0907569	-0.21368981	70.33	0	2
Hungary	-1.3616649	-1.0015266	-0.94875779	1.42	0.491	2
Ireland	0.86384223	0.72345485	0.64447605	0.27	0.874	2
Italy	-2.0875794	-0.84677336	-0.74971179	28.06	0	2
Latvia	-1.279814	-0.60094954	-0.42454142	5.54	0.063	2
Lithuania	-1.0722487	-0.82861782	-0.25798746	5.13	0.077	2
Malta	1.9774293	1.0371261	-0.21942884	15.71	0	2
Netherlands	1.5833751	1.752185	0.95521093	15.08	0.001	2
Poland	-0.5289018	-0.37355941	0.07699386	2.86	0.239	2
Portugal	-2.6679372	-1.7711122	-1.6042572	30.87	0	2
Romania	-2.7700114	-2.2434393	-0.95221223	22.28	0	2
Slovakia	-0.53899414	-0.96314839	-0.55834171	2.25	0.324	2
Slovenia	-0.46205991	-0.13189319	0.38183497	6.87	0.032	2
Spain	0.14663979	0.65368521	0.19088174	12.01	0.002	2
Sweden	1.4560361	2.1894243	1.2515891	21.08	0	2
Turkey	-0.53379047	-0.39146998	0.78696335	5.48	0.064	2
UK	0.2463528	1.0568939	0.93847613	13.22	0.001	2
Constant	5.0591583	4.5661501	-5.0180365			

A significant test statistic provides evidence that the parallel regression assumption has been violated

Model D: Unem – FLT

Table 17. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	chi2	p>chi2	df
All				6920.72	0	140
f_lt_fitch	0.02924667	0.03782699	0.04399071	1.53	0.466	2
Age	-0.07794336	-0.07741248	-0.06796916	12.07	0.002	2
Age²	0.00071948	0.00073846	0.00065672	8.97	0.011	2
Education	0.3223238	0.29375614	0.19584777	83.7	0	2
Female	-0.12999154	-0.0801843	-0.0823418	6.6	0.037	2
Student	0.21650918	0.1561108	0.05147196	5.7	0.058	2
Unemployed	-0.73469986	-0.81231237	-0.58788193	37.24	0	2
Retired	-0.09866732	-0.08249717	-0.00310213	6.98	0.03	2
Farmer	0.03959734	-0.04156395	-0.06239599	1.89	0.388	2
Fisherman	-0.12244903	0.1267998	-0.2653315	1.69	0.428	2
Professional (lawyer, etc.)	0.5777514	0.47340844	0.43182673	1.41	0.493	2
Owner of a shop, craftmen etc	0.31049861	0.26935486	0.05617795	21.75	0	2
Business proprietors	0.57891354	0.61135502	0.37379075	14.36	0.001	2
Employed professional	0.63576739	0.3946865	0.06002448	170.61	0	2
General management	1.1039218	1.0838984	0.66257274	20.6	0	2
Middle management	0.92101298	0.73775022	0.23724082	153.63	0	2
Supervisor	0.60159492	0.40200578	0.02366207	25.07	0	2
Skilled manual worker	0.25658619	0.05876811	-0.13779598	58.48	0	2
Unskilled manual worker	-0.13756562	-0.26920937	-0.30654596	8.44	0.015	2
child15	-0.0417671	-0.01352343	0.01438336	14.18	0.001	2
Unmarried	-0.4140483	-0.35055611	-0.37370115	5.71	0.058	2
Divorced / Separated	-0.8302566	-0.77228123	-0.68316894	15.35	0	2
Widowed	-0.53020098	-0.55035418	-0.62084687	7.3	0.026	2
Other	-0.40299474	-0.24218052	-0.26922155	2.02	0.364	2
Refusal	-0.57933219	-0.41437997	-0.36415584	1.77	0.413	2
Unemployment	-0.03847082	-0.03443684	-0.01172839	22.72	0	2
GDPgrowth	0.02377107	0.00155405	-0.00919752	36.25	0	2
Openness	-0.63247261	-0.29274731	0.40879854	41.6	0	2
Internet_users	0.00442608	-0.00107754	-0.00494441	5.16	0.076	2
LE	0.0050572	0.01707701	0.04397575	0.88	0.644	2
Urban_pop	-0.05767781	-0.03440978	0.01842643	23.97	0	2
Inflation	-0.00913618	-0.00904493	-0.00001728	3.43	0.18	2
Enroll_tertiary_gross	-0.00561805	-0.00721857	-0.00581779	1.12	0.571	2
Old_pop	0.2236694	0.00460032	0.01023484	17.74	0	2
Young_pop	0.06958827	0.01300473	0.03830445	4.81	0.09	2
2005	0.03741956	0.01580158	-0.08419071	8.88	0.012	2
2006	0.13578308	0.04185737	-0.08068686	10.59	0.005	2
2007	0.1866396	0.18935953	-0.02501543	14.49	0.001	2
2008	0.06688842	0.04203237	-0.10895895	4.95	0.084	2
2009	0.12734351	0.02314587	-0.15614907	6.06	0.048	2
2010	-0.05911005	0.14510272	0.03745899	3.09	0.213	2
2011	0.01349323	0.21802683	0.03415389	3.87	0.144	2
2012	0.07239178	0.21431864	-0.02953924	4.2	0.123	2

Variable	y>1	y>2	y>3	chi2	p>chi2	df
Belgium	1.5255831	1.746659	-0.20227055	27.64	0	2
Bulgaria	-2.3228965	-1.709988	-1.7221577	3.1	0.212	2
Croatia	-1.8590064	-0.72257183	0.48488238	72.51	0	2
Cyprus	-0.51908085	-0.83159339	0.20815828	18.7	0	2
Czech	0.53627855	0.15643157	-0.6146156	21.78	0	2
Denmark	1.6093216	2.4288638	1.8546518	10.79	0.005	2
Estonia	-0.38097231	-0.15037507	-0.73522771	7.43	0.024	2
Finland	1.6343759	1.8241022	0.66966463	31.52	0	2
France	-0.55382204	0.26331206	-0.47216022	16.08	0	2
Germany	-0.99050332	0.25773857	0.07498969	27.14	0	2
Greece	-2.3974642	-1.0354506	-0.17059344	66.53	0	2
Hungary	-1.3334594	-0.96818826	-0.89872903	1.52	0.467	2
Ireland	0.85825254	0.73801127	0.66072046	0.22	0.895	2
Italy	-2.0778211	-0.85028837	-0.78554168	26.93	0	2
Latvia	-1.2477593	-0.56975061	-0.36727033	5.79	0.055	2
Lithuania	-1.0369634	-0.78416401	-0.18960729	5.63	0.06	2
Malta	1.842286	0.87311612	-0.47565852	18.23	0	2
Netherlands	1.4887918	1.6411934	0.80753079	16.57	0	2
Poland	-0.45237386	-0.27025886	0.20850437	3.37	0.186	2
Portugal	-2.6228057	-1.7218619	-1.5490779	31.02	0	2
Romania	-2.6614074	-2.1126463	-0.80198015	23.13	0	2
Slovakia	-0.46695627	-0.85276191	-0.38545801	2.69	0.261	2
Slovenia	-0.35085314	0.0151682	0.58641265	8.66	0.013	2
Spain	0.09693171	0.59339217	0.09222821	13.27	0.001	2
Sweden	1.3517116	2.0556737	1.0713154	23.01	0	2
Turkey	-0.59723421	-0.46346325	0.62563141	4.7	0.095	2
UK	0.1666177	0.95333911	0.78898461	12.66	0.002	2
Constant	4.5884072	3.988419	-6.0065117			

A significant test statistic provides evidence that the parallel regression assumption has been violated

1.11.3 Country effects – Gologit estimation

Variable	LS>1 vs. LS≤1				LS>2 vs. LS≤2				LS>3 vs. LS≤3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
Bulgaria	-2.6322	-2.5744	-3.0112	-2.2886	-1.2549	-1.2175	-1.7409	-1.6919	-0.4224	-0.4167	-1.2079	-1.3454
	(0.5301)***	(0.5250)***	(0.4611)***	(0.3325)***	(0.4480)**	(0.4453)**	(0.3428)***	(0.3386)***	(0.5791)	(0.6180)	(0.4643)**	(0.3731)***
Denmark	0.5568	0.3944	1.0766	0.8479	1.7301	1.5636	2.2350	2.0702	2.0652	1.8986	2.5467	2.3832
	(0.7295)	(0.6998)	(0.6330)	(0.6128)	(0.7229)*	(0.6977)*	(0.6244)***	(0.6202)***	(0.7899)**	(0.7788)*	(0.6813)***	(0.6869)***
France	-0.8611	-1.0265	-0.823	-1.1743	0.08634	-0.07128	0.1522	0.003555	-0.3387	-0.4901	-0.04334	-0.1463
	(0.6704)	(0.6565)	(0.6460)	(0.6265)	(0.6486)	(0.6286)	(0.6288)	(0.6335)	(0.7070)	(0.7033)	(0.6843)	(0.6997)
Germany	-0.7669	-0.8238	-0.8733	-0.4768	0.2368	0.196	0.1987	0.2115	0.3757	0.3417	0.2746	0.1628
	-0.4137	-0.4463	(0.4703)	(0.4220)	(0.3230)	(0.3188)	(0.3264	(0.3356)	(0.3024)	(0.2958)	(0.2932)	(0.2692)
Greece	-1.6243	-1.5412	-1.9915	-1.6936	-0.6344	-0.5646	-1.0280	-0.9553	-0.1541	-0.1070	-0.6387	-0.6142
	(0.4717)***	(0.4805)***	(0.4579)***	(0.4018)***	(0.4200)	(0.4321)	(0.3814)**	(0.3863)*	(0.4102)	(0.4241)	(0.3558)	(0.3885)
Hungary	-2.0577	-1.9750	-2.0155	-1.5404	-0.8832	-0.8306	-0.9680	-0.9302	0.03830	0.05686	-0.4099	-0.4892
	(0.4310)***	(0.4450)***	(0.4267)***	(0.4380)***	(0.3995)*	(0.3878)*	(0.4029)*	(0.4024)*	(0.4559)	(0.4745)	(0.4683)	(0.4171)
Italy	-1.3757	-1.3888	-1.8404	-1.6165	-0.5273	-0.5322	-0.9274	-0.8933	-0.6601	-0.6704	-0.9704	-0.9807
	(0.3997)***	(0.4281)***	(0.4332)***	(0.4083)***	(0.3405)	(0.3528)	(0.3551)**	(0.3659)*	(0.3138)*	(0.3259)*	(0.3201)**	(0.3395)**
Romania	-1.9893	-1.7905	-2.4523	-2.0303	-0.9666	-0.8046	-1.5820	-1.4785	-0.2690	-0.1486	-1.1494	-1.1092
	(0.8034)*	(0.8249)*	(0.6469)***	(0.6806)**	(0.8360)	(0.8147)	(0.6504)*	(0.6379)*	(0.8948)	(0.9021)	(0.6482)	(0.6407)
Spain	0.01836	-0.04371	0.003371	-0.08872	0.5776	0.5183	0.4732	0.4243	0.4364	0.3771	0.2267	0.1765
	(0.3608)	(0.3549)	(0.4159)	(0.4507)	(0.3561)	(0.3480)	(0.3990)	(0.3979)	(0.3344)	(0.3274)	(0.3602)	(0.3504)
UK	-0.1565	-0.2709	-0.08051	-0.3157	0.7532	0.6405	0.8329	0.7140	0.8109	0.7014	1.0064	0.9117
	(0.4827)	(0.4675)	(0.4597)	(0.4413)	(0.4647)	(0.4485)	(0.4442)	(0.4452)	(0.5088)	(0.5030)	(0.4857)*	(0.4957)
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696
Pseudo R-squared	0.1445	0.1445	0.1435	0.1435	0.1445	0.1445	0.1435	0.1435	0.1445	0.1445	0.1435	0.1435
ll	-2.31e+05	-2.31e+05	-2.25e+05	-2.25e+05	-2.31e+05	-2.31e+05	-2.25e+05	-2.25e+05	-2.31e+05	-2.31e+05	-2.25e+05	-2.25e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, openness, internet_users, le, youth_unem, urban_pop, inflation, enroll_tertiary_gross, old_pop, young_pop. * p<0.05, ** p<0.01, *** p<0.001

1.11.4 Personal characteristics coefficients – Gologit estimations

Variable	LS>1 vs. LS≤1				LS>2 vs. LS≤2				LS>3 vs. Ls≤3			
	A:GDP-LLT	**B:GDP-fLT**	**C:Unem-LLT**	**D:Unem-FLT**	**A:GDP-LLT**	**B:GDP-FLT**	**C:Unem-LLT**	**D:Unem-FLT**	**A:GDP-LLT**	**B:GDP-fLT**	**C:Unem-LLT**	**D:Unem-FLT**
age	-0.07635	-0.07637	-0.07583	-0.07588	-0.07489	-0.07490	-0.07446	-0.07446	-0.07402	-0.07403	-0.07365	-0.07363
	(0.0053)***	(0.0053)***	(0.0051)***	(0.0051)***	(0.0054)***	(0.0054)***	(0.0051)***	(0.0051)***	(0.0055)***	(0.0055)***	(0.0053)***	(0.0053)***
age2	0.0007202	0.0007204	0.0007162	0.0007162	0.0007202	0.0007204	0.0007162	0.0007162	0.0007202	0.0007204	0.0007162	0.0007162
	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***	(0.0001)***
educ	0.3127	0.3129	0.3183	0.3173	0.2894	0.2895	0.2937	0.2937	0.1975	0.1976	0.2012	0.2016
	(0.0322)***	(0.0322)***	(0.0341)***	(0.0341)***	(0.0219)***	(0.0218)***	(0.0230)***	(0.0230)***	(0.0161)***	(0.0161)***	(0.0163)***	(0.0163)***
gender	-0.1183	-0.1184	-0.1225	-0.1227	-0.08257	-0.08255	-0.08426	-0.08427	-0.08105	-0.08102	-0.08467	-0.08467
	(0.0236)***	(0.0237)***	(0.0240)***	(0.0240)***	(0.0213)***	(0.0213)***	(0.0218)***	(0.0219)***	(0.0223)***	(0.0223)***	(0.0221)***	(0.0221)***
unemployed	-0.7530	-0.7517	-0.7569	-0.7573	-0.7995	-0.7989	-0.8126	-0.8127	-0.6009	-0.6013	-0.5958	-0.5950
	(0.0834)***	(0.0835)***	(0.0796)***	(0.0800)***	(0.0721)***	(0.0720)***	(0.0719)***	(0.0718)***	(0.0577)***	(0.0576)***	(0.0590)***	(0.0591)***
retired	-0.09368	-0.09308	-0.09473	-0.09352	-0.07356	-0.07348	-0.07834	-0.07838	-0.04382	-0.04416	-0.03062	-0.03074
	(0.0854)	(0.0854)	(0.0844)	(0.0850)	(0.0664)	(0.0664)	(0.0673)	(0.0672)	(0.0526)	(0.0526)	(0.0555)	(0.0555)
business owner	0.5985	0.5988	0.5901	0.5888	0.6036	0.6036	0.5816	0.5817	0.4096	0.4098	0.4067	0.4067
	(0.1159)***	(0.1162)***	(0.1130)***	(0.1121)***	(0.0915)***	(0.0916)***	(0.0915)***	(0.0915)***	(0.0775)***	(0.0776)***	(0.0751)***	(0.0752)***
employed	0.6534	0.6540	0.6446	0.6452	0.4098	0.4100	0.4114	0.4115	0.04733	0.04737	0.06241	0.06272
	(0.0860)***	(0.0862)***	(0.0881)***	(0.0887)***	(0.0599)***	(0.0599)***	(0.0609)***	(0.0608)***	(0.0411)	(0.0411)	(0.0425)	(0.0426)
child15	0.008697	0.008632	0.01094	0.01092	0.008697	0.008632	0.01094	0.01092	0.008697	0.008632	0.01094	0.01092
	(0.0154)	(0.0154)	(0.0153)	(0.0153)	(0.0154)	(0.0154)	(0.0153)	(0.0153)	(0.0154)	(0.0154)	(0.0153)	(0.0153)
unmarried	-0.3473	-0.3474	-0.3514	-0.3514	-0.3473	-0.3474	-0.3514	-0.3514	-0.3473	-0.3474	-0.3514	-0.3514
	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***	(0.0347)***
divorced	-0.7467	-0.7468	-0.7519	-0.7519	-0.7467	-0.7468	-0.7519	-0.7519	-0.7467	-0.7468	-0.7519	-0.7519
	(0.0449)***	(0.0449)***	(0.0439)***	(0.0439)***	(0.0449)***	(0.0449)***	(0.0439)***	(0.0439)***	(0.0449)***	(0.0449)***	(0.0439)***	(0.0439)***
widow	-0.5691	-0.5691	-0.5724	-0.5722	-0.5691	-0.5691	-0.5724	-0.5722	-0.5691	-0.5691	-0.5724	-0.5722
	(0.0381)***	(0.0381)***	(0.0378)***	(0.0378)***	(0.0381)***	(0.0381)***	(0.0378)***	(0.0378)***	(0.0381)***	(0.0381)***	(0.0378)***	(0.0378)***
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696

Pseudo R-squared	0.1445	0.1445	0.1435	0.1435	0.1445	0.1445	0.1435	0.1435	0.1445	0.1445	0.1435	0.1435
ll	-2.31e+05	-2.31e+05	-2.25e+05	-2.25e+05	-2.31e+05	-2.31e+05	-2.25e+05	-2.25e+05	-2.31e+05	-2.31e+05	-2.25e+05	-2.25e+05

Standard errors in parentheses. Note: control variables: country dummies, time dummies, openness, internet_users, le, youth_unem, urban_pop, inflation, enroll_tertiary_gross, old_pop young_pop. p<0.05, ** p<0.01, *** p<0.001

1.11.5 Life satisfaction – Time trend by country – Gologit

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
f_lt_fitch		-0.01894		-0.008228		-0.009832		-0.006559		-0.01840		-0.007752
		(0.0199)		(0.0226)		(0.0171)		(0.0150)		(0.0172)		(0.0161)
l_lt_fitch	-0.01559		0.0004284		-0.01668		-0.01012		-0.02498		-0.01229	
	(0.0236)		(0.0269)		(0.0180)		(0.0161)		(0.0204)		(0.0191)	
unem			-0.03680*	-0.03859*			-0.03846***	-0.03810***			-0.01069	-0.01008
			(0.0160)	(0.0164)			(0.0105)	(0.0106)			(0.0175)	(0.0176)
lgdpcapita	1.1669*	1.1539*			0.6496	0.6098			0.7242+	0.6919+		
	(0.5489)	(0.5396)			(0.4164)	(0.4063)			(0.4143)	(0.4015)		
gdpgrowth	0.01934	0.02012	0.02185	0.02285	0.01259+	0.01222+	0.01397*	0.01375+	-0.002037	-0.001949	0.001732	0.001577
	(0.0149)	(0.0151)	(0.0162)	(0.0165)	(0.0065)	(0.0068)	(0.0070)	(0.0073)	(0.0063)	(0.0067)	(0.0064)	(0.0067)
inflation	-0.006572	-0.006689	0.001294	0.001096	-0.006584	-0.006340	-0.002632	-0.002627	-0.002366	-0.001942	0.0001307	0.0003731
	(0.0072)	(0.0073)	(0.0074)	(0.0073)	(0.0072)	(0.0072)	(0.0062)	(0.0062)	(0.0093)	(0.0093)	(0.0082)	(0.0083)
Belgium	-9.0769	-9.7638	-1.1655	-1.8514	5.1781	4.8935	8.0142	7.7410	9.1856	8.3192	7.7070	7.1714
	(11.1134)	(11.3581)	(9.9754)	(10.0460)	(8.6905)	(8.8100)	(8.6190)	(8.6798)	(6.3547)	(6.2165)	(6.5312)	(6.2724)
Bulgaria	-1.4548	-1.6088	-3.4909*	-3.6031*	0.04969	-0.06606	-1.5089+	-1.5439+	0.7229	0.5481	-1.2606	-1.3298
	(1.7366)	(1.7587)	(1.5312)	(1.4855)	(1.5159)	(1.5004)	(0.8211)	(0.8180)	(1.6569)	(1.5897)	(0.9968)	(0.9545)
Croatia	2.1656	2.3066	-1.7089	-1.6247	-1.9336	-1.8291	-3.7334	-3.6166	-1.8410	-1.5843	-2.3726	-2.1814
	(3.9184)	(3.9737)	(3.4447)	(3.4493)	(3.1009)	(3.1168)	(3.1648)	(3.1610)	(2.0855)	(2.0623)	(2.2288)	(2.1416)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
Cyprus	-4.6204***	-4.7083***	-4.4312**	-4.5211**	-1.7353+	-1.7545+	-1.2434	-1.2636	0.4340	0.3186	-0.03096	-0.08807
	(1.2260)	(1.2344)	(1.3535)	(1.3776)	(1.0095)	(1.0161)	(1.1062)	(1.1093)	(0.7187)	(0.7266)	(0.7744)	(0.7681)
Czech Rep.	-2.3632	-2.5716	-1.9716	-2.0913	1.8514	1.7052	1.7799	1.6875	1.2381	0.9618	0.2992	0.1468
	(2.3252)	(2.3638)	(2.2021)	(2.1575)	(2.1405)	(2.1388)	(1.9311)	(1.9265)	(1.7204)	(1.6455)	(1.6937)	(1.6123)
Denmark	-7.0582	-7.4517	-1.5457	-1.9603	3.1515	3.0046	5.3825	5.2284	6.1976	5.6707	5.6356	5.3085
	(6.8392)	(6.9713)	(6.0866)	(6.1390)	(5.4467)	(5.5241)	(5.4645)	(5.5045)	(3.8845)	(3.8216)	(4.0253)	(3.8805)
Estonia	-0.1603	-0.2508	-0.7253	-0.8102	0.8727	0.8087	0.2221	0.2007	0.4595	0.3323	-0.3410	-0.3986
	(1.1383)	(1.1489)	(1.1853)	(1.1600)	(0.8412)	(0.8426)	(0.7299)	(0.7322)	(0.9619)	(0.9220)	(0.7716)	(0.7395)
Finland	-5.4592	-5.8142	-1.2660	-1.6122	2.5140	2.3564	4.0914	3.9478	4.7631	4.2829	4.0077	3.7181
	(5.8412)	(5.9629)	(5.2060)	(5.2519)	(4.6777)	(4.7445)	(4.6574)	(4.6940)	(3.3752)	(3.3066)	(3.5119)	(3.3767)
France	-6.4526	-6.7695	-3.0000	-3.3630	0.4771	0.3775	1.7978	1.6960	3.6623	3.2773	2.6045	2.3761
	(4.9965)	(5.1124)	(4.4383)	(4.4946)	(3.9156)	(3.9844)	(3.8994)	(3.9407)	(2.8645)	(2.8074)	(2.9254)	(2.8237)
Germany	2.1096	1.9278	3.8358	3.6012	1.2728	1.2491	1.6110	1.5796	2.8227+	2.6854	2.0867	2.0040
	(3.1387)	(3.2155)	(3.0411)	(3.0586)	(2.2008)	(2.2334)	(2.1752)	(2.1874)	(1.6992)	(1.6764)	(1.5789)	(1.5351)
Greece	0.4156	0.4861	-2.2716	-2.2081	-1.9058	-1.8725	-3.3003+	-3.2438	-0.7343	-0.6043	-1.3769	-1.2728
	(2.3621)	(2.3859)	(2.2116)	(2.2192)	(1.9294)	(1.9344)	(1.9834)	(1.9800)	(1.2543)	(1.2579)	(1.2650)	(1.2343)
Hungary	-1.1292	-1.1499	-2.6329**	-2.6548**	-0.9248	-0.9457	-1.8188*	-1.8073*	-0.4800	-0.5066	-1.1697*	-1.1648*
	(1.0598)	(1.0748)	(0.9532)	(0.9646)	(0.6933)	(0.6954)	(0.7383)	(0.7368)	(0.5936)	(0.5895)	(0.4565)	(0.4573)
Ireland	-1.7275	-1.5744	-2.5343	-2.4205	-1.9817	-1.8808	-1.8027	-1.7396	-2.4866	-2.3150	-1.6461	-1.5482
	(2.6644)	(2.7378)	(2.5211)	(2.5290)	(2.0867)	(2.0972)	(1.9136)	(1.9188)	(1.7647)	(1.7285)	(1.6138)	(1.5631)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
Italy	-0.8364	-0.9153	-1.3565	-1.4352	-0.1741	-0.2082	-0.7667	-0.7789	1.3616+	1.3028+	0.5584	0.5389
	(1.2278)	(1.2736)	(1.2624)	(1.2898)	(0.8644)	(0.8751)	(0.6980)	(0.7107)	(0.7756)	(0.7642)	(0.5745)	(0.5687)
Latvia	-0.7597	-0.8514	-2.0700*	-2.1453*	-0.3245	-0.3979	-1.3433*	-1.3548*	0.5315	0.4058	-0.5478	-0.5937
	(1.1689)	(1.1861)	(1.0068)	(0.9738)	(0.9197)	(0.9223)	(0.6291)	(0.6326)	(1.0788)	(1.0395)	(0.7266)	(0.7022)
Lithuania	-1.7253	-1.7766+	-3.1693***	-3.2505***	-1.4712*	-1.4924*	-2.3701***	-2.3537***	-0.03566	-0.1046	-1.2016+	-1.2151+
	(1.0534)	(1.0772)	(0.7789)	(0.7712)	(0.6939)	(0.6997)	(0.6725)	(0.6630)	(0.7049)	(0.6887)	(0.6327)	(0.6267)
Malta	-7.8241	-8.4688	-2.0702	-2.6362	4.4833	4.1664	6.4227	6.1578	7.3279	6.5016	5.4892	4.9985
	(9.2543)	(9.4663)	(8.3091)	(8.3601)	(7.5992)	(7.6755)	(7.4595)	(7.4969)	(5.4087)	(5.2613)	(5.6491)	(5.4169)
Netherlands	-4.8990	-5.1588	-1.1995	-1.4586	2.1615	2.0570	3.7695	3.6607	3.5727	3.2186	3.3267	3.1052
	(4.5755)	(4.6594)	(4.0730)	(4.1100)	(3.7038)	(3.7482)	(3.7291)	(3.7508)	(2.5464)	(2.5085)	(2.6808)	(2.5880)
Portugal	-0.01370	0.05065	-2.8168	-2.7315	-1.1942	-1.1990	-2.4033	-2.3616	-1.5007	-1.4500	-2.1979+	-2.1379+
	(2.6800)	(2.7251)	(2.3607)	(2.3952)	(1.7320)	(1.7564)	(1.8670)	(1.8744)	(1.1497)	(1.1594)	(1.1604)	(1.1388)
Poland	1.1456	1.3311	-2.2436	-2.0783	-2.5199	-2.4439	-4.0167	-3.9217	-3.1060	-2.8603	-3.4431+	-3.2734+
	(3.6039)	(3.6684)	(3.2049)	(3.2226)	(2.8384)	(2.8653)	(2.8861)	(2.8938)	(1.9468)	(1.9298)	(2.0412)	(1.9686)
Romania	2.6910	2.9138	-3.1801	-2.9771	-3.0390	-2.9427	-5.7662	-5.6257	-4.0230	-3.7013	-5.0143+	-4.7775+
	(5.5306)	(5.6291)	(4.8150)	(4.8669)	(4.0847)	(4.1279)	(4.2393)	(4.2515)	(2.8178)	(2.8007)	(2.8608)	(2.7524)
Slovakia	1.1608	1.3738	-2.2628	-2.0168	-2.0330	-1.9727	-3.2205	-3.1379	-4.6436*	-4.4092*	-4.3281+	-4.1716+
	(4.3757)	(4.4744)	(3.9404)	(3.9972)	(3.1131)	(3.1640)	(3.1844)	(3.2118)	(2.2037)	(2.1795)	(2.2188)	(2.1455)
Slovenia	4.9565	5.2472	-0.1385	0.2027	-0.8763	-0.7988	-3.0619	-2.9487	-3.4026	-3.0482	-3.1646	-2.9256
	(5.6686)	(5.7796)	(5.0430)	(5.0931)	(4.3820)	(4.4414)	(4.4641)	(4.4919)	(3.0997)	(3.0667)	(3.1769)	(3.0772)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
Spain	-2.7120	-2.9654	-1.1769	-1.3439	2.2355	2.0620	2.5678	2.4476	3.7505	3.4003	2.6327	2.4313
	(3.5722)	(3.6715)	(3.2177)	(3.2321)	(3.0087)	(3.0299)	(2.8298)	(2.8408)	(2.2894)	(2.2084)	(2.3046)	(2.1970)
Sweden	-4.6035	-4.9916	-0.02326	-0.4270	3.3237	3.1637	4.9226	4.7747	6.0653	5.5610	5.1740	4.8721
	(6.6224)	(6.7653)	(5.9545)	(6.0163)	(5.1821)	(5.2587)	(5.1804)	(5.2248)	(3.6880)	(3.6188)	(3.7822)	(3.6443)
Turkey	-6.8762**	-6.8757**	-6.9895*	-7.2826*	-5.1360*	-4.9075*	-4.4304+	-4.2839+	-1.9004	-1.7952	-2.5738	-2.4778
	(2.6102)	(2.6570)	(3.1163)	(3.0629)	(2.0921)	(2.0150)	(2.3001)	(2.2139)	(2.0358)	(1.9935)	(2.1689)	(2.1190)
UK	-5.2503	-5.5172	-1.8866	-2.1818	0.9383	0.8464	2.2363	2.1427	3.7121	3.3715	3.0453	2.8393
	(4.4658)	(4.5602)	(3.9705)	(4.0120)	(3.5558)	(3.6105)	(3.5547)	(3.5851)	(2.5650)	(2.5218)	(2.6270)	(2.5370)
Time	0.02176	0.01587	0.08768	0.08389	0.1145	0.1107	0.1140	0.1112	0.1196+	0.1134+	0.1272*	0.1237*
	(0.1414)	(0.1449)	(0.1476)	(0.1495)	(0.0951)	(0.0960)	(0.0997)	(0.1002)	(0.0642)	(0.0640)	(0.0633)	(0.0619)
*Belgium*time*	0.05295	0.05955	0.03183	0.03808	-0.05381	-0.05120	-0.03738	-0.03570	-0.1515*	-0.1458*	-0.1170*	-0.1142*
	(0.1066)	(0.1098)	(0.1093)	(0.1103)	(0.0682)	(0.0695)	(0.0628)	(0.0637)	(0.0592)	(0.0583)	(0.0515)	(0.0500)
*Bulgaria*time*	-0.03710	-0.03690	0.1279+	0.1231+	-0.001136	0.003152	0.1038+	0.1044+	-0.01582	-0.01495	0.05799	0.05718
	(0.0777)	(0.0782)	(0.0679)	(0.0690)	(0.0659)	(0.0654)	(0.0602)	(0.0601)	(0.0611)	(0.0606)	(0.0420)	(0.0422)
*Croatia*time*	0.02785	0.03359	0.05531	0.05992	0.01260	0.01422	0.03637	0.03711	-0.04053	-0.03681	-0.01264	-0.01165
	(0.0654)	(0.0685)	(0.0671)	(0.0694)	(0.0440)	(0.0448)	(0.0414)	(0.0424)	(0.0290)	(0.0297)	(0.0256)	(0.0275)
*Cyprus*time*	0.1183	0.1313	0.02821	0.04112	-0.04436	-0.03846	-0.08941	-0.08448	-0.2983***	-0.2804***	-0.2305**	-0.2207**
	(0.1601)	(0.1656)	(0.1488)	(0.1534)	(0.1091)	(0.1123)	(0.1084)	(0.1106)	(0.0769)	(0.0742)	(0.0736)	(0.0688)
*Czech rep.*time*	0.1063	0.1157	0.1091	0.1151	-0.07768	-0.07254	-0.06187	-0.05876	-0.08048	-0.07075	-0.02767	-0.02267
	(0.0903)	(0.0944)	(0.0845)	(0.0844)	(0.0798)	(0.0805)	(0.0642)	(0.0647)	(0.0720)	(0.0693)	(0.0645)	(0.0617)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
*Denmark*time*	0.2162***	0.2166***	0.2188***	0.2161***	0.01813	0.02016	0.02765	0.02849	0.03397	0.03636+	0.02598	0.02691
	(0.0266)	(0.0256)	(0.0363)	(0.0353)	(0.0233)	(0.0237)	(0.0279)	(0.0277)	(0.0212)	(0.0214)	(0.0183)	(0.0183)
*Estonia*time*	0.07807	0.08930	0.08330	0.08842	-0.08353	-0.07387	-0.04377	-0.03860	-0.1135	-0.09761	-0.05101	-0.04285
	(0.1180)	(0.1214)	(0.1220)	(0.1199)	(0.0988)	(0.0983)	(0.0857)	(0.0852)	(0.0963)	(0.0919)	(0.0814)	(0.0764)
*Finland*time*	0.1657***	0.1680***	0.1555***	0.1551***	0.008992	0.01145	0.01118	0.01265	-0.02696	-0.02313	-0.02949	-0.02754
	(0.0351)	(0.0357)	(0.0401)	(0.0399)	(0.0288)	(0.0292)	(0.0306)	(0.0306)	(0.0235)	(0.0231)	(0.0242)	(0.0231)
*France*time*	-0.07955	-0.08682	0.07356	0.06538	0.08561	0.08231	0.1605	0.1568	0.07907	0.06745	0.07959	0.07189
	(0.1902)	(0.1925)	(0.1769)	(0.1786)	(0.1583)	(0.1590)	(0.1637)	(0.1639)	(0.1007)	(0.1004)	(0.1066)	(0.1046)
*Germany*time*	-0.3386*	-0.3340*	-0.3686*	-0.3573*	0.05282	0.04769	0.05698	0.05418	-0.008105	-0.01162	0.01289	0.01053
	(0.1513)	(0.1512)	(0.1611)	(0.1597)	(0.0851)	(0.0846)	(0.0884)	(0.0868)	(0.0497)	(0.0497)	(0.0477)	(0.0479)
*Greece*time*	-0.1396+	-0.1393*	-0.1028	-0.1124	-0.1633*	-0.1529*	-0.1298*	-0.1241*	-0.2133***	-0.2041***	-0.1823***	-0.1764***
	(0.0713)	(0.0705)	(0.0798)	(0.0770)	(0.0637)	(0.0600)	(0.0596)	(0.0567)	(0.0569)	(0.0532)	(0.0507)	(0.0473)
*Hungary*time*	0.005775	0.002046	0.1203	0.1148	0.1046	0.1052	0.1606	0.1593	-0.03576	-0.03824	-0.003276	-0.005976
	(0.1180)	(0.1195)	(0.1187)	(0.1192)	(0.0967)	(0.0970)	(0.1027)	(0.1026)	(0.0640)	(0.0648)	(0.0665)	(0.0663)
*Ireland*time*	0.02835	0.02844	0.1048	0.09474	-0.02617	-0.01724	0.03087	0.03515	-0.06956	-0.06383	-0.03365	-0.03028
	(0.0750)	(0.0751)	(0.0901)	(0.0892)	(0.0724)	(0.0703)	(0.0727)	(0.0710)	(0.0612)	(0.0600)	(0.0556)	(0.0550)
*Italy*time*	-0.04250	-0.03952	-0.04039	-0.04367	-0.1023*	-0.09613*	-0.08877*	-0.08524*	-0.1782***	-0.1712***	-0.1689***	-0.1647***
	(0.0520)	(0.0535)	(0.0659)	(0.0652)	(0.0419)	(0.0402)	(0.0416)	(0.0398)	(0.0405)	(0.0380)	(0.0388)	(0.0355)
*Latvia*time*	0.09913	0.1088	0.1450	0.1481	-0.004132	0.006937	0.05087	0.05590	-0.1234	-0.1064	-0.06440	-0.05610
	(0.1068)	(0.1106)	(0.1076)	(0.1072)	(0.0974)	(0.0965)	(0.0753)	(0.0751)	(0.0811)	(0.0748)	(0.0637)	(0.0578)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
*Lithuania*time*	0.09172	0.09982	0.1208	0.1325	0.07446	0.07708	0.1217+	0.1220+	-0.1443*	-0.1351*	-0.03288	-0.02930
	(0.1223)	(0.1254)	(0.1169)	(0.1161)	(0.0877)	(0.0894)	(0.0687)	(0.0701)	(0.0691)	(0.0670)	(0.0545)	(0.0528)
*Malta*time*	-0.01937	-0.01294	0.009032	0.01574	0.02130	0.02353	0.06494+	0.06567+	-0.05058	-0.04379	0.006744	0.008747
	(0.0390)	(0.0416)	(0.0557)	(0.0576)	(0.0323)	(0.0351)	(0.0374)	(0.0397)	(0.0318)	(0.0318)	(0.0316)	(0.0320)
*Netherlands*time*	0.04073	0.03417	0.1273	0.1196	0.08979	0.08751	0.1239	0.1212	0.1085+	0.1004	0.09885	0.09349
	(0.1163)	(0.1184)	(0.1063)	(0.1070)	(0.0873)	(0.0884)	(0.0890)	(0.0894)	(0.0630)	(0.0617)	(0.0647)	(0.0623)
*Portugal*time*	0.09562	0.1056	0.04395	0.05578	-0.007825	-0.004248	-0.01564	-0.01339	-0.2124**	-0.2004*	-0.1521+	-0.1460+
	(0.1295)	(0.1334)	(0.1237)	(0.1239)	(0.0911)	(0.0938)	(0.0847)	(0.0863)	(0.0820)	(0.0791)	(0.0789)	(0.0753)
*Poland*time*	-0.1439	-0.1522	-0.02634	-0.03944	-0.06073	-0.05898	-0.003065	-0.003937	-0.03462	-0.04035	-0.03449	-0.03835
	(0.1386)	(0.1411)	(0.1248)	(0.1264)	(0.1121)	(0.1139)	(0.1154)	(0.1164)	(0.0772)	(0.0778)	(0.0813)	(0.0807)
*Romania*time*	-0.1771+	-0.1710+	-0.1048	-0.1002	-0.1203+	-0.1164	-0.05064	-0.04945	-0.1717**	-0.1654**	-0.08245*	-0.07982*
	(0.1009)	(0.1037)	(0.0933)	(0.0938)	(0.0726)	(0.0725)	(0.0500)	(0.0503)	(0.0658)	(0.0640)	(0.0392)	(0.0381)
*Slovakia*time*	0.1883	0.2026	0.09070	0.1062	0.04622	0.04989	0.009268	0.01222	-0.06968	-0.05535	-0.01696	-0.009755
	(0.1619)	(0.1679)	(0.1484)	(0.1510)	(0.1158)	(0.1193)	(0.1099)	(0.1122)	(0.0854)	(0.0837)	(0.0837)	(0.0805)
*Slovenia*time*	0.06099	0.07064	0.04444	0.04708	-0.1343	-0.1250	-0.1180	-0.1124	-0.1389+	-0.1239+	-0.09937	-0.09113
	(0.0986)	(0.1023)	(0.0975)	(0.0963)	(0.0846)	(0.0841)	(0.0757)	(0.0749)	(0.0780)	(0.0737)	(0.0735)	(0.0681)
*Spain*time*	-0.1275	-0.1230	-0.09504	-0.09770	-0.1496*	-0.1426*	-0.1056+	-0.1020+	-0.1667**	-0.1602**	-0.1360*	-0.1326*
	(0.0800)	(0.0813)	(0.0960)	(0.0945)	(0.0682)	(0.0654)	(0.0632)	(0.0611)	(0.0627)	(0.0610)	(0.0559)	(0.0548)
*Sweden*time*	0.05668	0.05972	0.05912	0.06026	0.01974	0.02236	0.03353	0.03461	-0.02232	-0.01801	-0.01412	-0.01255
	(0.0593)	(0.0605)	(0.0711)	(0.0715)	(0.0466)	(0.0477)	(0.0500)	(0.0506)	(0.0296)	(0.0296)	(0.0276)	(0.0273)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
*Turkey*time*	-0.1800	-0.1868	-0.08973	-0.08471	0.04872	0.03697	0.09413	0.08561	0.008301	-0.008324	0.02415	0.01312
	(0.1430)	(0.1414)	(0.1369)	(0.1291)	(0.1293)	(0.1269)	(0.1269)	(0.1238)	(0.0873)	(0.0836)	(0.1010)	(0.0950)
*UK*time*	0.1179+	0.1219+	0.07201	0.07457	0.06334+	0.06460+	0.05632	0.05773	-0.002156	0.001184	-0.008403	-0.006318
	(0.0615)	(0.0630)	(0.0674)	(0.0676)	(0.0379)	(0.0389)	(0.0409)	(0.0412)	(0.0319)	(0.0321)	(0.0307)	(0.0297)
2005	-0.01473	-0.01372	0.02758	0.03080	0.01191	0.009104	0.03836	0.03684	-0.1288*	-0.1314*	-0.07615	-0.07768
	(0.0554)	(0.0548)	(0.0427)	(0.0421)	(0.0506)	(0.0501)	(0.0469)	(0.0460)	(0.0573)	(0.0574)	(0.0520)	(0.0516)
2006	0.07228	0.07299	0.1477+	0.1566*	0.03846	0.03259	0.07727	0.07320	-0.1385**	-0.1428**	-0.05931	-0.06251+
	(0.0884)	(0.0858)	(0.0842)	(0.0782)	(0.0753)	(0.0732)	(0.0700)	(0.0663)	(0.0517)	(0.0526)	(0.0381)	(0.0379)
2007	-0.04509	-0.04075	0.1835	0.1978+	0.08324	0.08112	0.2042*	0.1997*	-0.1777+	-0.1772+	-0.01399	-0.01708
	(0.1501)	(0.1500)	(0.1262)	(0.1185)	(0.1160)	(0.1155)	(0.0943)	(0.0910)	(0.0936)	(0.0927)	(0.0672)	(0.0667)
2008	-0.2899	-0.2849	0.02884	0.04298	-0.1133	-0.1131	0.05429	0.04915	-0.2740*	-0.2719*	-0.05769	-0.06164
	(0.1996)	(0.2012)	(0.1703)	(0.1609)	(0.1483)	(0.1489)	(0.1124)	(0.1094)	(0.1077)	(0.1072)	(0.0733)	(0.0732)
2009	-0.1134	-0.1037	-0.009181	0.01477	-0.08596	-0.09566	-0.02259	-0.02864	-0.2649***	-0.2676***	-0.1863*	-0.1908*
	(0.2135)	(0.2090)	(0.2278)	(0.2194)	(0.1250)	(0.1271)	(0.1239)	(0.1251)	(0.0693)	(0.0703)	(0.0836)	(0.0840)
2010	-0.1533	-0.1485	-0.09093	-0.07456	0.001817	-0.005804	0.04446	0.03997	-0.03772	-0.04205	0.005189	0.001342
	(0.1102)	(0.1091)	(0.1164)	(0.1111)	(0.0698)	(0.0684)	(0.0639)	(0.0604)	(0.0516)	(0.0510)	(0.0608)	(0.0592)
2011	-0.1222	-0.1196	-0.03395	-0.02608	0.009360	0.007815	0.06344	0.06094	-0.03584	-0.03676	0.03249	0.03054
	(0.0922)	(0.0920)	(0.0946)	(0.0918)	(0.0614)	(0.0610)	(0.0557)	(0.0540)	(0.0423)	(0.0423)	(0.0448)	(0.0445)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
age	-0.07985***	-0.07985***	-0.08008***	-0.08008***	-0.07788***	-0.07788***	-0.07711***	-0.07711***	-0.07240***	-0.07240***	-0.07224***	-0.07223***
	(0.0090)	(0.0090)	(0.0090)	(0.0090)	(0.0063)	(0.0063)	(0.0060)	(0.0060)	(0.0056)	(0.0056)	(0.0055)	(0.0055)
age2	0.0007416***	0.0007417***	0.0007458***	0.0007458***	0.0007479***	0.0007479***	0.0007398***	0.0007398***	0.0007054***	0.0007053***	0.0007043***	0.0007042***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
educ	0.3166***	0.3165***	0.3232***	0.3232***	0.2889***	0.2889***	0.2929***	0.2929***	0.1926***	0.1926***	0.1968***	0.1968***
	(0.0319)	(0.0318)	(0.0341)	(0.0340)	(0.0219)	(0.0219)	(0.0231)	(0.0231)	(0.0160)	(0.0160)	(0.0161)	(0.0161)
Female	-0.1164***	-0.1164***	-0.1201***	-0.1201***	-0.08161***	-0.08161***	-0.08337***	-0.08338***	-0.08287***	-0.08288***	-0.08631***	-0.08631***
	(0.0249)	(0.0249)	(0.0253)	(0.0253)	(0.0217)	(0.0217)	(0.0222)	(0.0222)	(0.0216)	(0.0216)	(0.0213)	(0.0213)
Student	0.2733**	0.2733**	0.2563*	0.2563*	0.1710+	0.1710+	0.1622+	0.1623+	0.02868	0.02890	0.03312	0.03323
	(0.1030)	(0.1030)	(0.1066)	(0.1066)	(0.0888)	(0.0888)	(0.0925)	(0.0925)	(0.0631)	(0.0631)	(0.0634)	(0.0634)
Unemployed	-0.7401***	-0.7403***	-0.7475***	-0.7477***	-0.8015***	-0.8013***	-0.8139***	-0.8138***	-0.5962***	-0.5961***	-0.5898***	-0.5897***
	(0.0818)	(0.0818)	(0.0787)	(0.0787)	(0.0711)	(0.0712)	(0.0716)	(0.0716)	(0.0551)	(0.0552)	(0.0568)	(0.0569)
Retired	-0.09878	-0.09876	-0.1026	-0.1026	-0.08409	-0.08407	-0.08693	-0.08688	-0.02770	-0.02756	-0.01649	-0.01642
	(0.0873)	(0.0873)	(0.0866)	(0.0866)	(0.0673)	(0.0673)	(0.0686)	(0.0686)	(0.0531)	(0.0531)	(0.0554)	(0.0554)
Farmer	0.06079	0.06056	0.04920	0.04891	-0.02546	-0.02541	-0.03734	-0.03729	-0.07426	-0.07443	-0.05786	-0.05792
	(0.1187)	(0.1189)	(0.1105)	(0.1107)	(0.0723)	(0.0723)	(0.0723)	(0.0723)	(0.0654)	(0.0654)	(0.0644)	(0.0644)
Fisherman	-0.1740	-0.1747	-0.2118	-0.2147	0.2112	0.2129	0.2126	0.2138	-0.3338	-0.3314	-0.3129	-0.3116
	(0.3607)	(0.3596)	(0.3540)	(0.3528)	(0.1891)	(0.1892)	(0.1985)	(0.1985)	(0.2908)	(0.2899)	(0.2859)	(0.2854)

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
Professional (lawyer, etc.)	0.5165***	0.5166***	0.5375***	0.5372***	0.4469*	0.4471*	0.4621**	0.4623**	0.4686***	0.4687***	0.4854***	0.4855***
	(0.1263)	(0.1264)	(0.1175)	(0.1177)	(0.1873)	(0.1873)	(0.1732)	(0.1733)	(0.0643)	(0.0641)	(0.0577)	(0.0576)
Owner of a shop, craftmen etc	0.3556**	0.3558**	0.3530**	0.3531**	0.2828*	0.2828*	0.2789*	0.2789*	0.07984+	0.07988+	0.08275+	0.08275+
	(0.1335)	(0.1335)	(0.1343)	(0.1343)	(0.1262)	(0.1263)	(0.1243)	(0.1243)	(0.0470)	(0.0470)	(0.0478)	(0.0478)
Business proprietors	0.5909***	0.5909***	0.5773***	0.5772***	0.6006***	0.6005***	0.5782***	0.5781***	0.4091***	0.4091***	0.4055***	0.4054***
	(0.1152)	(0.1152)	(0.1120)	(0.1120)	(0.0906)	(0.0906)	(0.0910)	(0.0910)	(0.0763)	(0.0763)	(0.0737)	(0.0736)
Employed professional	0.6521***	0.6520***	0.6438***	0.6437***	0.4101***	0.4101***	0.4127***	0.4127***	0.05153	0.05160	0.06579	0.06583
	(0.0829)	(0.0829)	(0.0852)	(0.0853)	(0.0600)	(0.0600)	(0.0613)	(0.0613)	(0.0407)	(0.0407)	(0.0420)	(0.0420)
General management	1.2342***	1.2344***	1.2082***	1.2086***	1.1086***	1.1085***	1.1010***	1.1010***	0.6689***	0.6689***	0.6817***	0.6817***
	(0.1774)	(0.1772)	(0.1621)	(0.1618)	(0.1220)	(0.1221)	(0.1264)	(0.1264)	(0.0956)	(0.0956)	(0.0994)	(0.0994)
Middle management	1.0042***	1.0044***	0.9943***	0.9945***	0.7477***	0.7477***	0.7407***	0.7407***	0.2423***	0.2424***	0.2550***	0.2550***
	(0.1087)	(0.1087)	(0.1154)	(0.1155)	(0.0791)	(0.0791)	(0.0813)	(0.0814)	(0.0459)	(0.0459)	(0.0480)	(0.0481)
Supervisor	0.5897***	0.5898***	0.5816***	0.5814***	0.4102***	0.4103***	0.4180***	0.4180***	0.04899	0.04900	0.06363	0.06367
	(0.1631)	(0.1632)	(0.1726)	(0.1728)	(0.0980)	(0.0981)	(0.0996)	(0.0997)	(0.0513)	(0.0513)	(0.0505)	(0.0505)
Skilled manual worker	0.2636**	0.2637**	0.2694**	0.2694**	0.07829	0.07826	0.07835	0.07834	-0.1480*	-0.1480*	-0.1285*	-0.1285*
	(0.0858)	(0.0858)	(0.0885)	(0.0885)	(0.0635)	(0.0635)	(0.0658)	(0.0658)	(0.0617)	(0.0617)	(0.0612)	(0.0612)
Unskilled manual worker	-0.1263	-0.1264	-0.1247	-0.1248	-0.2637**	-0.2637**	-0.2619**	-0.2619**	-0.3580***	-0.3580***	-0.3416***	-0.3416***
	(0.0863)	(0.0863)	(0.0886)	(0.0886)	(0.0807)	(0.0807)	(0.0822)	(0.0822)	(0.0571)	(0.0571)	(0.0614)	(0.0614)
child15	-0.02316	-0.02314	-0.01917	-0.01918	-0.005482	-0.005456	-0.004151	-0.004140	0.02250	0.02253	0.02456+	0.02457+

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
	(0.0253)	(0.0253)	(0.0233)	(0.0233)	(0.0188)	(0.0188)	(0.0186)	(0.0186)	(0.0138)	(0.0138)	(0.0138)	(0.0138)
Unmarried	-0.4083***	-0.4083***	-0.4156***	-0.4154***	-0.3412***	-0.3412***	-0.3499***	-0.3500***	-0.3543***	-0.3544***	-0.3551***	-0.3551***
	(0.0442)	(0.0442)	(0.0451)	(0.0451)	(0.0387)	(0.0387)	(0.0384)	(0.0384)	(0.0391)	(0.0391)	(0.0394)	(0.0394)
Divorced / Separated	-0.8378***	-0.8377***	-0.8511***	-0.8510***	-0.7675***	-0.7675***	-0.7785***	-0.7785***	-0.6643***	-0.6644***	-0.6592***	-0.6592***
	(0.0660)	(0.0660)	(0.0669)	(0.0668)	(0.0616)	(0.0616)	(0.0606)	(0.0606)	(0.0389)	(0.0389)	(0.0405)	(0.0405)
Widowed	-0.5369***	-0.5370***	-0.5391***	-0.5391***	-0.5486***	-0.5486***	-0.5534***	-0.5534***	-0.6263***	-0.6264***	-0.6298***	-0.6298***
	(0.0484)	(0.0484)	(0.0497)	(0.0497)	(0.0416)	(0.0415)	(0.0407)	(0.0407)	(0.0493)	(0.0493)	(0.0504)	(0.0504)
Other	-0.3862*	-0.3864*	-0.3814*	-0.3815*	-0.2921**	-0.2922**	-0.2899**	-0.2899**	-0.2944**	-0.2944**	-0.2950**	-0.2950**
	(0.1546)	(0.1543)	(0.1574)	(0.1571)	(0.0916)	(0.0916)	(0.0939)	(0.0939)	(0.0922)	(0.0922)	(0.0925)	(0.0925)
Refusal	-0.5842***	-0.5842***	-0.5696***	-0.5696***	-0.3798**	-0.3799**	-0.3842**	-0.3842**	-0.2879**	-0.2880**	-0.2971***	-0.2971***
	(0.1489)	(0.1489)	(0.1609)	(0.1609)	(0.1230)	(0.1228)	(0.1295)	(0.1294)	(0.0889)	(0.0888)	(0.0853)	(0.0853)
openness	-0.8430+	-0.8449+	-1.1259*	-1.1257*	-0.9587**	-0.9596**	-1.0600***	-1.0522***	-0.01683	-0.01611	-0.3572	-0.3489
	(0.4378)	(0.4345)	(0.4835)	(0.4821)	(0.2965)	(0.2999)	(0.3061)	(0.3043)	(0.2976)	(0.3008)	(0.2695)	(0.2679)
internet_users	-0.01416	-0.01488	-0.01814	-0.01899	-0.01112	-0.01108	-0.01201	-0.01209	0.003349	0.002989	-0.002348	-0.002532
	(0.0107)	(0.0106)	(0.0124)	(0.0125)	(0.0081)	(0.0081)	(0.0083)	(0.0084)	(0.0056)	(0.0054)	(0.0046)	(0.0045)
youth_unem	-0.01398+	-0.01464+			-0.01524***	-0.01508**			-0.001844	-0.001731		
	(0.0073)	(0.0076)			(0.0046)	(0.0046)			(0.0064)	(0.0065)		

Variable	LS> 1 vs. LS≤ 1				LS> 2 vs. LS≤ 2#				LS> 3vs. LS≤ 3			
	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT	A:GDP-LLT	B:GDP-fLT	C:Unem-LLT	D:Unem-FLT
LE	-0.005446	0.0001080	0.04283	0.04451	-0.01155	-0.008120	0.006274	0.007913	-0.03357	-0.03077	-0.004986	-0.005036
	(0.0994)	(0.1044)	(0.1228)	(0.1288)	(0.0653)	(0.0662)	(0.0827)	(0.0849)	(0.0499)	(0.0498)	(0.0596)	(0.0601)
urban_pop	0.2800	0.3018	0.03368	0.05335	-0.1480	-0.1376	-0.2395	-0.2301	-0.2602	-0.2318	-0.2117	-0.1941
	(0.3498)	(0.3575)	(0.3132)	(0.3150)	(0.2807)	(0.2839)	(0.2775)	(0.2789)	(0.2032)	(0.1985)	(0.2107)	(0.2023)
enroll_tertiary_gross	0.008451	0.008869	0.01129	0.01159	0.008376	0.008607	0.01014	0.01022	-0.00009958	0.0005517	0.001216	0.001440
	(0.0077)	(0.0077)	(0.0106)	(0.0106)	(0.0068)	(0.0070)	(0.0080)	(0.0081)	(0.0052)	(0.0051)	(0.0056)	(0.0055)
old_pop	-0.2900	-0.2869	-0.3510	-0.3276	-0.03174	-0.04294	-0.003164	-0.01012	-0.3144**	-0.3224**	-0.2475*	-0.2533**
	(0.2739)	(0.2690)	(0.2926)	(0.2823)	(0.1699)	(0.1684)	(0.1659)	(0.1629)	(0.1045)	(0.1055)	(0.0966)	(0.0965)
young_pop	0.2058	0.2030	0.03899	0.06805	0.3359*	0.3130*	0.2278	0.2155	0.02604	0.01363	0.02134	0.01311
	(0.1542)	(0.1375)	(0.2328)	(0.2106)	(0.1633)	(0.1551)	(0.1580)	(0.1497)	(0.1838)	(0.1780)	(0.1627)	(0.1585)
Constant	-22.642	-24.283	6.9715	4.8951	2.9955	2.9037	16.376	15.860	16.504	14.969	18.693	17.662
	(32.7560)	(33.4188)	(29.4796)	(30.1615)	(22.1294)	(22.6165)	(23.5369)	(23.8734)	(14.6836)	(14.7114)	(14.6956)	(14.3595)
Observations	234067	234067	228696	228696	234067	234067	228696	228696	234067	234067	228696	228696
Pseudo R-squared	0.1466	0.1466	0.1454	0.1454	0.1466	0.1466	0.1454	0.1454	0.1466	0.1466	0.1454	0.1454
ll	-2.30e+05	-2.30e+05	-2.24e+05	-2.24e+05	-2.30e+05	-2.30e+05	-2.24e+05	-2.24e+05	-2.30e+05	-2.30e+05	-2.24e+05	-2.24e+05

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001

2 Reporting Bias and Adaptation: The Case of Amputees

2.1 Introduction

Quality of life (QoL) assessment is of particular importance in health care expenditure nowadays. More countries adopt an economic evaluation assessment of new medical technologies that help make informed decisions based on what outcomes can be achieved with given resources. Often, outcomes are measured in terms of effectiveness (disease-specific physical units) or utility attained by patient. Utility is measured with different techniques and ideally converted into quality-adjusted life years to assess the improvement a new health technology brings to a patient in terms of qualitative life. In measuring utility, of high importance is the assessor, which can be either the patient, experts (clinicians) or the general public. As patients are considered biased in assessing their own condition, hypothetical valuations by the public, in their role as taxpayers, are currently considered the standard. However, it has been long confirmed that patients provide more accurate QoL valuations than the general public (Dolan et al., 2002, 2001, Ubel et al., 2003, 2001, Kane et al., 1986, Boyd et al., 1990 etc.).

In this context, we analyse the implications of QoL assessments made by a treatment group, represented by a sample of individuals with acquired amputations (grouped into three main categories), and control, the general public. Our results confirm adaptation (in line with existing research), but our main aim is to determine what explains the gap in QoL valuations, how fast amputees adapt and mainly, how patients evaluate other individuals' QoL.

Univariate tables and statistical analysis on the difference between QoL assessments made by amputees and the public, suggest that adaptation (inferred as a function of the change in QoL ratings in the duration since event) and personal characteristics may be the main determinants of the QoL evaluation gap. We find that this conclusion holds when we use a multivariate analysis too. We then implement in our analysis different time points and obtain that amputees adapt as soon as within the first two years since amputation. As individuals in our sample experienced the event leading to an amputation at different time points, we have the opportunity to assess their ability of predicting future QoL as well.

For this analysis, we distinguish our sample by cause of amputation, whether it was a medical condition that led to the event or an accidental injury. In this respect, we obtain that QoL valuations and predictions vary greatly between the two groups, as individuals with injury-related amputations perform better in terms of recovering after event and in predicting their own QoL.

An individual's own assessment of QoL is influenced by his/her own scale of reference bias, evaluating QoL based on a comparative reference point, either directly stated in the question, or subconsciously relative to another individual with the same characteristics or condition. This framework provides the opportunity to analyse the dynamics of QoL evaluations made by amputees on behalf of others with the same disability as themselves. While patients with shorter duration since event that lead to amputation evaluate their own QoL higher than those

of peers, the QoL reported converges over time, and thus we infer that patients themselves acknowledge adaptation.

This chapter is organized as follows: the next section reviews the main findings in the existing literature regarding the differences in evaluations of QoL made by patients with a health state and the public. In the following two sections, data and methodology are discussed; section 5 presents the results followed by conclusions.

2.2 Background

This chapter was compiled based on a targeted review on health-related quality of life, respondents bias and adaptation to health states, where seminal papers were identified through published reviews. Search terms were updated based on initially identified articles, such as Groot (2000, 2003), Dolan and Kahneman (2008) and McTaggart-Cowan et al. (2011). The review was conducted in PubMed, university online library and Google Scholar. The literature was supplemented by supervising professors Mireia Jofre-Bonet and Peter Ayton. The literature was updated in January 2019 based on recommended publications made by examiners during Viva.

Valuation of health-related quality of life (HRQoL) is at the base of health care resource allocation in more and more countries and aims at maximising health gains for a given budget. Nevertheless, there is a debate on whose values to choose. There are three sources to obtain HRQoL: patients, the public and experts (doctors or carers). The public's valuations are currently preferred from a societal perspective, as taxpayers and possible beneficiaries of the health care system (Devlin et al., 2017). However, the public's judgements of the QoL of patients do not acknowledge patients' adaptation over time which is a characteristic of patients' valuations (McTaggart-Cowan et al., 2011). The gap between the valuations of patients and the public has been extensively studied and the discrepancy between the two groups' valuations is typically attributed to the overestimation of the impact of a health state on wellbeing made by the public. Several potential determinants for this difference have been proposed. The most cited examples are unforeseen adaptation, *scale of reference bias* (Groot, 2000), *focussing illusion*, *framing effects*, and *response shift* (Dolan and Kahneman, 2008, Ubel et al., 2005).

Scale of reference bias implies that when assessing quality of life or wellbeing, we do so relative to a reference group; we compare our situation or ourselves with others with similar conditions (Groot, 2000). This is also evident in our analysis, where we observe that individuals in control group that know an amputee report higher valuations that those who do not, as the former would have a reference point, as shown in the next section. Also, when individuals assess different situations, either a condition (disability for example), or a fortunate event (winning the lottery), they tend to focus on the aspects that are different in their lives and evaluate quality of life or wellbeing through this spectrum. In this way, they disregard all elements that stay the same; and their evaluations are thus biased by *focusing illusion* (Ubel et al., 2005). *Response shift* might explain why some individuals subject to a condition or event provided different evaluations than expected; for example, paraplegic individuals might

overestimate their evaluations as they compare themselves to the how they felt immediately after event leading to disability. The phenomenon has been evident also in individuals surviving an accident who overestimate their happiness prior to the accident compared to controls, or in patients who had kidney-pancreas transplant who reported lower QoL for the time previous to transplant than the actual reported values before the event (Dolan and Kahneman, 2008). Lastly, *framing* is reflected in how the scenario or question is outlined, as a loss or a gain, which affects the perception of responder and, thus, the response. This is discussed at large within prospect theory, and, in short, people's responses depend on their risk aversion (Tversky and Kahneman, 1981).

Adaptation to health states has been analysed by both psychologists (Baron et al. 2003; Brickman et al. 1978; Buick and Petrie 2002), and economists (Brazier et al. 2005; De Witt et al., 2000) as well as by medical researchers and others (Sackett et al. 1978, Boyd et al., 1990; Menzel et al. 2002; Riis et al. 2005; Damschroder et al. 2005). These papers are a few of many that provide evidence that patients gradually adapt to their conditions and suggest that adaptation is one of the reasons for the discrepancy between patients' and the general public's valuations of HRQoL. Famously Brickman et al. (1978) compared lottery winners, a sample of paralyzed accident victims (paraplegics and quadriplegics) and a control group based on common background characteristics and obtained valuations on happiness across the three groups that were more similar than many would expect. Lottery winners and controls were not statistically different at 5% level of significance in their ratings of current happiness, and although the paralysed accident victims were significantly less happy than controls, they did not appear nearly as unhappy as might have been expected giving happiness ratings above the midpoint of the scale. Brickman et al. (1978) concluded that people adapted to their new conditions, generated either by a positive event (lottery winning) or a negative one (accidents leading to paraplegia), and as such their happiness, in relative terms, was not as affected as much as people would expect.

Schulz and Decker (1985) also studied spinal-cord-injured persons and reported very little difference in the means or distributions of the self-reported wellbeing of 100 spinal-cord-injured persons (paraplegics or quadriplegics) and a control sample of adults from the general population. The sample of spinal-cord-injured persons had a longer time to adapt – while none of the accident victims in the sample in Brickman et al' (1978) had lived with their condition for more than a year, the mean and median ages of injury for Schulz and Decker's sample were 35 and 33 years, respectively.

Buick and Petrie (2002) compared the valuations of patients diagnosed with, and surgically treated for, breast cancer and a matched group of healthy individuals on measures of distress, coping, and illness perceptions. These authors reported a marked incongruity between healthy women's perceptions and actual patients' experiences of the disease and its treatment. Healthy women overestimated patients' distress, perceived the consequences of breast cancer to be more severe, and were more likely to believe that patients used denial and disengagement strategies. Healthy women were less likely to perceive treatment for breast cancer as a cure or control for the disease, reporting that the disease would last a longer period of time than

reported by patients. The healthy women also consistently overestimated the emotional impact of treatment, rating patients' level of tension, depression, anger, confusion and inertia higher than that reported by patients themselves during treatment. Healthy women were also less likely to perceive patients as being able to use positive reappraisal and acceptance in coping with treatment than the patients reported.

Buick and Petrie (2002) argued that the inaccurately negative perceptions of cancer could be responsible for healthy women's failure to adhere to appropriate preventive and early detection behaviour; perceiving breast cancer as causing severe consequences on a person's life, and perceiving treatment efficacy as poor might partly explain low compliance with breast self-examination and low attendance rates at mammography screening. Misperceptions regarding how patients cope with treatment may also mean that healthy women provide emotional support to cancer patients in situations where it is not necessary and that they are unresponsive in other settings when support is needed.

Boyd et al. (1990) found substantial variation between different groups of individuals in the utilities they attach to life with a colostomy. Of particular interest was the observed difference between two groups of patients who had received treatment for rectal cancer in the utilities they attached to life with a colostomy. Patients with a colostomy as a result of surgery for rectal cancer consistently assigned higher utilities to that state than did patients who had been treated for rectal cancer by radiotherapy without colostomy. This difference could not be attributed to any pre-treatment differences in preference for radiation over surgery: a review of the medical records of the patients revealed that patients were referred for radiation therapy because concurrent medical disorders made them unsuitable candidates for surgery.

While they didn't report data tracking any changes in utility over time, Boyd et al. (1990) suggested that the different knowledge of what a life with a colostomy actually entails might explain the gap between the valuations of the two groups of rectal cancer patients. The closer knowledge of the state in the patients with a colostomy may have caused them to assign it a higher utility than did the other groups, all of whom had less knowledge. Thus, in advance of actually experiencing a particular outcome of treatment, patients may regard it as highly undesirable, but, nevertheless, when it is directly experienced, they become accustomed to it and learn to tolerate it well.

This interpretation was underscored by the fact that the utilities obtained from physicians actively involved in the treatment of rectal cancer were in general similar to those of patients with a colostomy. By contrast the utilities of healthy volunteers were similar to those of patients with rectal cancer who did not have a colostomy. Consequently, even patients with the same underlying health condition provided different values for specific outcomes

Riis et al. (2005) performed a similar comparison, comparing happiness evaluations made by chronically ill haemodialysis patients and healthy controls who were matched to the patients on age, race, sex, and education. Using an ecological momentary assessment measure of mood, the authors found that haemodialysis patients were no less happy than the healthy controls,

suggesting that haemodialysis patients had largely, if not completely, adapted to their condition.

In a forecasting task, the healthy controls predicted how they would feel if they had been haemodialysis patients for either one year or for as long as their matched patient had been on haemodialysis (whichever was greater); the haemodialysis patients predicted how they would feel if they had never had kidney problems and had never needed haemodialysis treatment. Both patients and controls wrongly predicted that the difference in mood experienced under health versus illness would be large. The controls failed to anticipate the adaptation –making a very large and significant underestimation of the average mood of the haemodialysis patients.

The haemodialysis patients also seemed unaware of the extent to which they had adapted - they predicted that they would be happier if they had never been sick, yet they appear to be incorrect in this belief, as they were already about as happy as healthy people are. This suggests that patients can be a source of biased QoL assessments by underestimating the extent to which they have adapted over time.

As these authors point out ignorance of adaptation could produce harmful consequences. Patients, wrongly thinking they could be happier if their condition was removed or mitigated, might opt for unnecessarily risky surgeries; and policymakers might be tempted to invest in programs that have a minimal impact on people's well-being, possibly at the expense of programs that really do prevent misery.

Walsh and Ayton (2009a) asked healthy individuals and individuals with one of five different chronic health states (asthma, diabetes, epilepsy, haemophilia and kidney disease requiring dialysis) to report their own happiness and predict the levels of happiness in others with the same condition as themselves as well as those with other conditions. Similar to the studies reviewed above by Schulz and Decker (2002) and Riis et al. (2005) they found that, while the happiness levels of those with and without chronic health states did not differ, healthy individuals misjudged that those with health states would be less happy. Those with chronic health states also misjudged the impact of chronic health conditions other than their own but made significantly less extreme forecasts – suggesting that living with a condition provided some awareness that other conditions do not have as extreme an impact as those without the experience of a chronic health state assume. This study also found that while healthy controls judged that they personally would be more adversely affected than others if they acquired a chronic health state, those with chronic health states thought they were better off than the average person with the same chronic heath state.

In these cross-sectional studies, inferences about accuracy are based on a confound of the viewpoint of judgments (self/other) with whether the respondent has the condition being evaluated (have/not-have). Thus, healthy controls' predictions are typically compared with the self-reports of those living with chronic health states. This is an important issue because people often judge themselves as different to others (e.g. Kruger, 1999) and, more specifically, that they would be worse affected by a hypothetical health state than others (Walsh & Ayton 2009b). In Walsh and Ayton's (2009a) study although healthy controls showed a bias in their

predictions of their own (hypothetical) happiness with a health condition, their predictions for others' happiness with the same (hypothetical) health state were also biased, albeit to a lesser degree, indicating that the mis-prediction is not attributable to a self-other difference.

The studies reviewed thus far analysed the differences between the HRQoL reported by patients and healthy individuals using cross-sectional data. There is however, another string of literature that studies the issue of adaptation to health conditions using longitudinal data (Oswald and Powdthavee, 2008, Groot, 2000, Groot, 2003, Cubi-Molla et al., 2015, McNamee and Mendolia, 2014). This framework allows us to directly observe how individuals adapted to health conditions over time.

Oswald and Powdthavee (2008) analysed the wellbeing reported in the British Household Panel Survey (BHPS). They identified 200 people who newly acquired a disability during the period 1996-2002 when psychological wellbeing scores on each individual were available and for whom there were at least three consecutive years of wellbeing data. Oswald and Powdthavee note that as physical health automatically often rebounds from a setback, wellbeing would be expected to do so also and so a recovery in wellbeing from a new disability would not, of itself, constitute evidence of adaptation.

To try to get around this as effectively as possible, Oswald and Powdthavee focused on individuals who continued to report themselves in the disabled category. They found that such continuing disabled individuals recovered most of their previous pre-disability reported scores after two years, thereby showing adaptation to their health conditions. A sample of those categorised as having a continuing "serious disability" (defined as those unable to do at least one of a list of day-to-day activities: doing the housework, climbing the stairs, getting dressed, and walking for more than 10 minutes) showed a lesser adaptation over two years, but nevertheless the gap between their pre and post disability scores roughly halved. Similar findings were obtained by de Hond et al. (2018) in their analysis on individuals with acquired disabilities, who completed the Survey of Health, Ageing and Retirement in Europe (SHARE). The authors included individuals who developed a daily living limitation during the six waves of the survey and remained disabled over this period (2004-2015). They obtain evidence that individuals adapted to their disability in terms of life satisfaction reported, but not in self-perceived health. The authors motivate the latter on the duration of period studied (9.5 years) inferring that it might take longer to observe adaptation in self-perceived health.

Gupta et al. (2015) analysed adaptation to illness on the same database as Oswald and Powdthavee (2008) over 1991-2008 period across the distribution of wellbeing to determine whether the impact of illness varies across the SWB distribution. They included individuals who reported an illness with no prior illness reported for four years before and they are followed-up for the next five waves; individuals who are returning to good health and report another illness during follow-up are excluded. They find that illness has a varied effect across SWB distribution, with negative effects immediately after illness incidence on all percentiles expect for those reporting very high SWB scores (the 90th percentile). There is significant evidence of short-term adaptation in the 25th percentile, with improvements in reported SWB after two years of illness duration. There is little evidence of adaptation at the median of the

SWB distribution and below, but recovery is more pronounced at the upper percentiles. These results highlight that individuals who reported low SWB before an illness are more affected that those with higher levels reported, and their recovery is slower.

Two longitudinal datasets are often used in empirical settings to analyse adaptation to health states, BHPS and the German Socio-Economic Panel (GSOEP). Existing research on these dataset indicate that individuals with acquired disabilities adapt over time to their new conditions (Pagan-Rodriguez 2010, Lucas 2007, Powdthavee 2009, Oswald and Powdthavee 2008); however, their adaptation depends on follow-up time, severity of disability and outcome measurement; for example, while individuals with mild disabilities showed adaptation in all areas studied (health, income, housing, social life, partner, leisure time), those with severe disabilities showed incomplete adaptation in health and income (Powdthavee 2009).

Cubi-Molla et al. (2015) analyse the dynamics of self-assessed health (SAH) on the data from the same source, estimating the evolution of SAH for different conditions. Consistent with the notion of adaptation they found that increased duration of a long-standing illness increases the likelihood that individuals report higher scores of SAH. There are, however, a few chronic diseases for which a significant result of duration is not obtained, such as cancer, Crohn's disease, or depression. It has been shown that while people adapt to many conditions or new situations, the effect might not be universal. There are conditions to which people find it difficult to adapt or do not adapt at all. Generally, these are the conditions that the individuals cannot ignore, such as progressive diseases or continuous pain (Dolan and Kahneman, 2008).

The variation in adaptation to different conditions was also analysed by Baji and Biro (2018) on a longitudinal dataset, the Health and Retirement Study, a survey of individuals aged over 50 years in the US, from 1992 to 2014. This analysis is particularly interesting in distinguishing between adaptation and recovery by analysing the dynamics of the subjective and objective survival probabilities, along with self-reported health, in patients diagnosed with cancer, stroke and myocardial infarction; if the subjective survival probabilities returns to level prior to diagnosis and the objective probabilities does not, this is inferred as adaptation as the individual changed their reference point; however, if both probabilities reverted to levels before diagnosis, the individuals would have recovered. The authors obtain that while all patients improve their ratings after diagnosis, there is a difference in the time patients with different conditions take to recover; cancer patients recover within 2-6 years after diagnosis (both objective and subjective survival probabilities revert to original levels), while patients with a stroke or heart attack only partially recovered.

The discrepancies between the reports of HRQoL of those with chronic health states and the public's forecasts of HRQoL for those states raises important questions about whose HRQoL estimates should be used in economic analyses. Groot analysed the importance of controlling for adaptation (2000) and reference bias (2000, 2003) in estimating SAH on its determinants. Reference bias occurs when people are asked about their wellbeing and they do so by comparing themselves to people in a similar situation as themselves, thus providing relative valuations.

Using BHPS data, Groot analysed reported SAH as a function of objective health (defined by the underlying health condition) and found that the reported SAH depends on adaptation and scale of reference (SAH evaluated relative to age and other personal characteristics). When controlling for these effects, Groot (2000, 2003) obtained lower values for both SAH and, implicitly derived health related utility values (used in the calculation of the quality adjusted life years).

Lacey, Fagerlin, Loewenstein, Smith, Riis, & Ubel (2008) found little evidence for scale recalibration in their study comparing both ratings and rankings of both patients and non-patients for a wide range of health states. The logic of the study assumed that if patients perceive their own health condition the same way non-patients do but use rating scales differently, then while patients and non-patients might give different ratings of the conditions we would expect patients and non-patients to give the same rank position to that condition. Alternatively, if patients are simply using the rating scales differently from non-patients, we would also expect them to rate not only their own condition higher than non-patients but other conditions as well. However, Lacey *et al.* found that patients not only assigned higher numerical QoL ratings to their own disease than did non-patients but also ranked it higher among the larger set of conditions. Lacey *et al.* concluded that scale recalibration cannot account for discrepant QoL ratings between patients and non-patients.

Another methodology to determine the existence of adaptation is based on experiments on healthy individuals. They are asked to evaluate the HRQoL on different conditions and are then sequentially given testimonials of individuals living with the respective conditions, or to do an adaptation exercise by relating to their own ability to adapt to negative events they have experienced themselves, after which they are asked to update their hypothetical HRQoL. Damschroder et al., (2005) used an online survey to obtain the QoL valuations by healthy individuals for paraplegia. They found that the individuals who undertook the adaptation exercise reported higher valuations of the HRQoL of the different conditions. Moreover, the difference between valuations attached to pre-existing and new onset of paraplegia was reduced. This latter result confirmed that, with the experience information on hand, individuals are able to account for the initial shock as well.

McTaggart-Cowan et al. (2011) performed a similar adaptation exercise for evaluating the HRQoL of three rheumatoid arthritis states. Univariate analysis was used to test for the statistical difference between the before- and after valuations, and multivariate analysis was conducted to test for the determinants of the changes in these valuations. The authors found that the main factors were age and own health status, where the younger and in better health individuals increased their valuations after the adaptation exercise.

Our review of the research on adaptation to health conditions establishes that adaptation cannot be plausibly attributed to any artefact and has to be accounted for. The evidence indicates that if patients' valuations are to be used in economic evaluations, they should be adjusted for adaptation as their reported HRQoL will include adaptation (McTaggart-Cowan et al., 2011). Patients might report higher QoL values than expected as they now have a different perception on their health and life and focus on the positive aspects they can still enjoy (Dolan

and Kahneman, 2008, Menzel et al., 2002). On the other side, healthy individuals do not account for adaptation and focus on the negative aspects of health conditions (Dolan and Kahneman, 2008, McTaggart-Cowan, 2011).

In this chapter, in line with existing literature, we first test for adaptation in a group of individuals with acquired amputations. We extend this research question by comparing the QoL valuations of amputees and the judged QoL valuations of a random sample of healthy individuals matched by personal characteristics, and empirically test for the factors that determine this difference, beyond adaptation. We also analyse the difference in reported QoL by amputees for themselves and for other amputees living with the same amputation.

For our analyses, we exploit two online surveys on two different samples: one with acquired amputations, and one of healthy individuals chosen randomly. We match both groups using personal characteristics and evaluate own QoL and hypothetical QoL for different points in time since amputation. Our analysis allows us to study how amputees predict their future QoL. We also test for a time frame of adaptation, at two and five years since event.

Our analyses are contributing to the discussions of adaptation and decision making in resource allocation on the following points:

- Firstly, we study amputation which is not a progressive disease or a worsening condition with which patients cannot live. As such, we do not expect QoL evaluations to change over time due to the health condition.
- Also, we have two sets of amputees, those who were amputated due a medical condition, and those who had an injury leading to an amputation. This provides an opportunity to test whether the two groups evaluate QoL differently and how well they predict QoL. While those amputated due to a medical condition might expect the event to occur and be mentally prepared for, those suffering an accident leading to amputation are not expecting to become disabled. For these individuals, the onset is specific. However, they are recovering better, reporting higher QoL in the aftermath, and predict their QoL with smaller error, compared to medically-related amputees.
- We are also investigating how amputees assess QoL of others. This provides a unique opportunity to see if patients overestimate their own QoL or are biased in their assessment. Our results show that they are not subject to focusing illusion or response shift; rather they acknowledge they are similar to other individuals with the same condition and they adapt as well.

2.3 Data

Our analysis is based on two questionnaires, on individuals with acquired amputations and on a random sample of the public matched by personal characteristics. The questionnaire on amputees was conducted between July 2008 and February 2009 with an online survey using Qualtrics® by Emma Walsh who was a PhD candidate at the time in the Department of Psychology, City, University of London. Emma collected the data for research, but no analysis was done on the data. Two questionnaires were conducted, one for individuals with acquired amputations and one for congenital amputees. The respondents were residents in USA, UK,

Canada, Australia, Ireland, Switzerland, New Zealand and Sweden. The online survey was conducted by Qualtrics®. There were only 14 respondents for the congenital amputees' survey and this survey was thus not considered in our analysis. There were 102 respondents who attempted the survey on acquired amputations but only 91 were complete responses and have been included in the analysis. We do not have any information on how the respondents were chosen and approached, and on the design of the original study (what respondents to include, where were they approached, why these specific countries, etc.)

The control group questionnaire was conducted online via Qualtrics® in March 2016. We developed the questionnaire based on the survey originally conducted on amputees. The vendor was asked to provide 100 complete responses from individuals of the general public who match the personal characteristics of those included in the original study (same ratios of male versus female, educational levels, age groups, etc.). The vendor collected 10 additional responses to ensure we achieved 100 complete responses. In total, there were 106 complete responses which were included in the analysis. As most respondents in the treatment group were residing in the USA, the vendor was asked to collect responses from USA residents. We did not have any control on who the respondents were and how they have been contacted to complete the survey.

The survey included questions on personal characteristics (age, gender, occupation, residence, marital status, number of children, education level, ethnicity). Amputees were asked to assess their own QoL (on a scale from 0 to 100, where 0 means QoL as bad as death and 100 is QoL as good as perfect health) at different time points before and after the amputation, the current level of pain, the cause of amputation, details on use of prosthetics and the medical care provider. They were also asked to evaluate their hypothetical current QoL if they had not had the amputation, the QoL of others with the same acquired or congenital amputation, and of others with the same personal characteristics as themselves but without amputation. There were 17 types of amputations included in the survey, but due to the small sample size, these were grouped into three categories: upper limb amputation, lower limb amputation and two or more amputations. The full set of questions in both surveys are included in Appendix 2.8.1.

The control group were asked the same questions on personal characteristics to which were added questions on whether they knew someone with an amputation, whether they considered themselves an optimist and lucky with respect to other in terms of health and income. The control group respondents were also asked to assess their own quality of life. The respondents were then asked to imagine they have an amputation (the three types of amputations were randomised amongst the control group in the same ratios identified in the amputees' group) and asked to evaluate the QoL if they had that amputation at the same time points as the amputees' group. The rest of the questions included in the amputees' group survey on additional scenarios were also included in the control group survey.

Table 1 presents the summary statistics of the two groups matched by personal characteristics. In the last column in **Table 1**, the t-test statistics for the differences between the two groups are presented. As observed, the only statistical difference is on reported QoL (at 0.1% level of significance) and percentage of respondents with medical or injury-related

amputation (at 5% level of significance). The QoL included in **Table 1** represents own QoL reported by amputees and the hypothetical QoL reported by healthy individuals if they had an amputation. On average, respondents in the control group reported a significant lower QoL score associated with a hypothetical amputation, compared to amputees.

Table 1. Summary statistics, amputees and control group

Variable	Description	Amputees		Control group		T test[†]
		Mean	St. dev.	Mean	St. dev.	
Amputation	0 – control group 1 – amputees	91		106		
Marital status	Married/Civil partnership	57.14%		53.77%		-0.0458 (0.2330)
	In a relationship	15.38%		6.60%		
	Separated	1.10%		0.94%		
	Divorced	6.59%		12.26%		
	Single	15.38%		23.58%		
	Widowed	4.40%		2.83%		
Occupation	Disabled	7.69%		4.72%		-0.7 (0.0705)
	Employed	59.34%		50%		
	Self employed	1.10%		4.72%		
	Business owner	1.10%		1.89%		
	Retired	20.88%		17.92%		
	Student	3.30%		4.72%		
	Unemployed	3.30%		8.49%		
	Housekeeper	3.30%		7.55%		
Number of children		1.38	1.28	1.50	1.45	0.6382 (0.1956)
Education - Highest level of education achieved	Primary	3.30%		0.94%		0.2736 (0.0671)
	Secondary	3.30%		4.72%		
	High school	26.37%		25.47%		
	College	18.68%		33.96%		
	Bachelor	34.07%		22.64%		
	Postgraduate	14.29%		12.26%		
Gender	Male	59.34%		50.94%		1.1804 (0.0711)
	Female	40.66%		49.06%		
Age	Age of respondent	48.65	11.20	46.90	14.01	-0.9757 (1.7973)
Ethnicity	White	58.24%		70.75%		1.8305 (0.0684)
	Black	0%		8.49%		
	Asian	4.40%		8.49%		
	Australian	4.40%		0%		
	Caucasian	23.08%		5.66%		
	Mixed	6.59%		1.89%		
	Hispanic	0%		4.72%		
	NA	3.39%		0%		
Type of amputation	Upper limb	16.48%		18.87%		-0.2091 (0.0828)
	Lower limb	68.13%		65.09%		
	Two or more amputations	15.38%		16.04%		
Cause of amputation	Medical	38.46%		26.40%		-1.76* (0.071)
	Injury	61.54%		73.60%		
Reported QoL (Quality of Life)	Response to quality of life question on a scale from 0 (“as bad as death”) to 100 (“as good as perfect health”) Amputees report their own QoL, and control respond on hypothetical QoL	76.73	18.49	60.54	22.59	-5.45*** (2.97)

[†]Standard error in parentheses; *** p-value < 0.001, * p-value < 0.05

The main variables of interest for the amputees' group are presented in **Table 2**. Duration is used as proxy for adaptation and is measured in months as many individuals suffered the amputation within a year of completing the survey.

Table 2. Summary statistics – amputees

Variable	Description	Mean	St. deviation
Duration	Months since amputation	181.27	185.40
Comorbidities	Derived from the same condition as amputation	0 – 40.66% 1 – 59.34%	
Prosthetics	Currently uses or ever used	97.80%	
	Never used or intends to use	2.20%	
Other medical conditions	Unrelated medical conditions	0 – 57.14% 1 – 42.86%	
Pain	0 – no pain 100 – incapacitating pain	26.17	26.54

The following table presents the summary statistics on selected variables on the control group. Comparing the statistics of these two groups on QoL, we observe that on average the amputees reported a slightly higher QoL value on average (**Table 1** – 76.73) compared to the control group (**Table 3** – 76.63). Moreover, the QoL reported by amputees is higher than the predicted QoL reported by controls (76.73 versus 60.54). Also, the control group's assessment of hypothetical QoL in case of amputation varies on some characteristics. For example, those who know an amputee reported on average a hypothetical QoL of 61.47; whereas individuals who do not know an amputee reported on average a QoL of 58.86. Those who consider themselves to be always an optimist and lucky in terms of income and health, report higher QoL values than the individuals who consider themselves to be sometimes or never optimist and lucky. The public also provides different evaluations if the amputation was caused by an accident or it is a consequence of a disease, with higher values assigned to amputations caused by accidents. Inspecting these statistics provide enough scope to discuss the potential determinants of the differences between amputees' and the public's QoL evaluations.

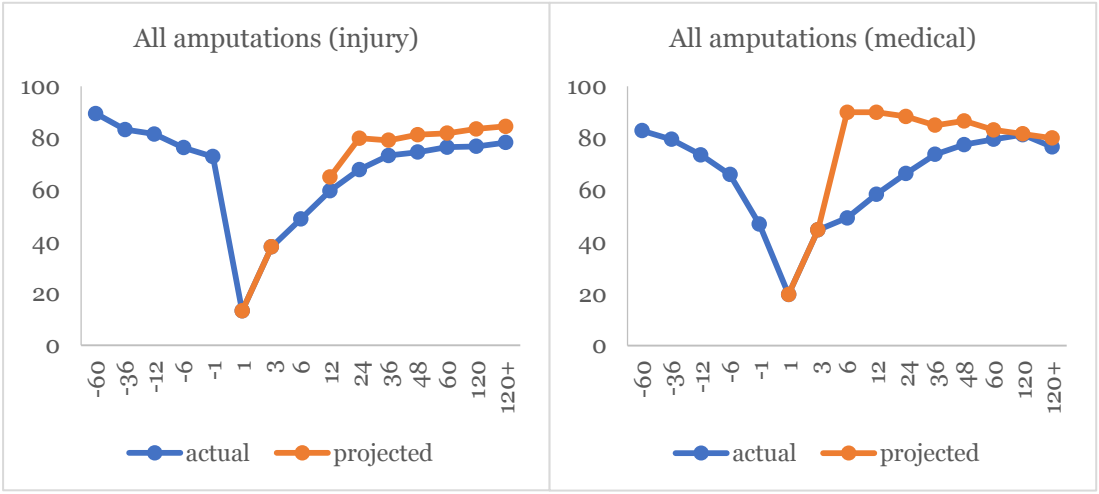
Table 3. Summary statistics – control group

Variable	Description	Mean	St. deviation
Own QoL	Response to quality of life question on a scale from 0 ("as bad as death") to 100 ("as good as perfect health")	76.63	19.30
Hypothetical QoL if optimist ("Do you consider yourself an optimist?")	Never	57.22	32.89
	Sometimes	58.52	23.08
	Always	64.77	18.47
Hypothetical QoL if lucky with respect to others in terms of income	Never	55.5	24.00
	Sometimes	57.89	22.18
	Always	71.38	19.87
Hypothetical QoL if lucky with respect to others in terms of health	Never	58.33	23.38
	Sometimes	56.93	23.87
	Always	66.28	19.68
Hypothetical QoL if respondent knows someone who has an amputation	Yes	61.47	23.55
	No	58.86	20.95
QoL responded depending on the cause of hypothetical amputation	Accident	62.16	22.37
	Disease	58.85	22.91

Amputees are asked to assess their QoL before and after the amputation at different timelines: 1 month, 3 months, 6 months, and then yearly up to 5 years before the amputation, and up to

more than 10 years after the amputation. As most these values are recalled, we used the most recent actual QoL evaluation for the empirical analysis. However, inspecting the evolution of QoL reported by amputees, we observe that there is adaptation as values increase over time after the amputation had happened, as shown in **Figure 1**. Our dataset also allows us to observe whether amputees can predict their QoL as some individuals assessed their future QoL (the amputation happened at different time points for each individual; as such, for some respondents, some of the time points included in the survey, for example, 2, 3 etc, years after event, had not passed yet at the time completing the survey). The reported QoL values presented in **Figure 1** distinguish between actual and predicted QoL, by cause of amputation. Inspecting the different QoL values reported by the two groups, we observe that individuals with an injury-related amputation predict more closely compared to those with medical-related amputations. Over the long-term, QoL values converge for both groups.

Figure 1 QoL evolution by type of amputation



Amputees were also asked to evaluate QoL for different scenarios, presented in **Table 4**. The averages of own QoL values reported by amputees in the three groups are reported in the last column. These values are compared with QoL associated with three scenarios (born with the same amputation, yourself with no amputation and others with similar characteristics [age and background] and no amputation) and t statistics are provided for each scenario.

Table 4. QoL evaluations (different scenarios)

	Born with the same amputation		Own QoL (no amputation)		QoL peers (no amputation)		Own QoL (mean)
	Mean	**T test**	Mean	**T test**	Mean	**T test**	**Mean**
Upper body amputees	60.8	2.52*	92.67	-2.27*	92.67	-2.12*	80
Lower body amputees	65.30	2.90**	88.31	-5.05***	91.32	-5.66***	75.20
Two or more amputees	69.29	1.52+	89.86	-3.66**	88.36	-2.19*	80

Note: T test on difference between mean of own QoL vs. assessment of others. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

The responses provided show that amputees think they are better off than individuals born with the same amputations (significant difference in all three groups). However, amputees report much higher QoL scores for themselves had they not had the amputation and as well for

others with similar characteristics and no amputations. While their valuations are already very high and comparable to the control group, their answers indicate they perceive their quality of life as worse off due to the amputation.

2.4 Empirical strategy

Our aim is to determine what explains the gap in QoL evaluations between amputees and control group, how fast amputees adapt, and how patients evaluate the QoL of other amputees. However, firstly we test if adaptation exists in our sample of amputees. For this purpose, we estimate the relationship between QoL and duration, as a proxy for adaptation. The estimation methodology is based on the latent QoL described by the following linear function:

$$QoL_i^* = f(duration,\ personal\ characteristics)$$

where i represents the individual, QoL_i^* is the continuous latent quality of life of individual i, determined by his/her own personal characteristics and the duration of amputation. However, we observe the reported answer of individuals to the QoL question on a 0-100 scale:

$$QoL_i = \alpha + \beta duration_i + \delta X_i + \gamma\ type\ of\ amp_i + \varepsilon_i$$

where X_i represents individual's personal characteristics, $duration_i$ is the period since the amputation in months, and $type\ of\ amp_i$ is a categorical variable, and includes upper limb (base category), lower limb, and two or more than two amputations.

In the empirical analysis we only consider the most current reported QoL, and for this reason the most robust estimation, given the small sample, is ordinary least squares (OLS) estimation. For this specification, we check for outliers, multicollinearity and structural form. We checked for heteroskedasticity, using visual inspection of residuals, Breusch-Pagan and White tests, and since we detect heteroskedasticity for several variables, we estimate a model with the weighted least squares technique, applied for the variables that yield heteroskedasticity (Williams, 2015). The other models analysed are ran with robust standard errors. Our main variable of interest is $duration_i$ as it represents the proxy for adaptation and its impact on reported QoL shows whether the amputees adapt or not over the time.

We complement our analysis with an adaptation time frame model to assess when adaptation occurs, on average. For this purpose, we estimate two models, where we compare those that had an amputation for less than 2 or 5 years to those that had a longer duration than these periods. The OLS estimated model is:

$$QoL_i = \alpha + \varphi duration_i\ 2(5)years + \beta duration_i + duration_i\ 2(5)years * duration_i + \delta X_i + \gamma\ type\ of\ amp_i + \varepsilon_i$$

In this estimation we include a dummy variable that distinguishes between those that had an amputation for less than 2(5) years to those that had the condition for a longer time, $duration_i\ 2(5)years$, and we interact this variable with $duration_i$ to capture the true effect of time since amputation. We also control for personal characteristics and type of amputation and estimate this model with robust standard errors.

We are also interested in what are the determinants of the differences in QoL evaluations assigned by amputees and the public. To analyse these factors, we estimate two models, one where we look at the differences between amputees reported QoL and the QoL amputees assign to peers with the same type of amputation. As we are interested in identifying the determinants that causes this difference to be positive or negative, we estimate this model using a probit model[8]:

$$P\left(\Delta QoL_{i-j} = 1 \middle| Z\right) = \Phi(\alpha + \beta duration_i + \delta X_i + \gamma\ type\ of\ amp_i)$$

and

$$P\left(\Delta QoL_{i-j} = 0 \middle| Z\right) = 1 - \Phi(\alpha + \beta duration_i + \delta X_i + \gamma\ type\ of\ amp_i)$$

where P represents the probability that the difference in QoL is either 1 (positive) or 0 (similar or negative), Φ is the standard normal cumulative distribution function, and Z represents the covariates included in the model. The estimation of probit model is maximum likelihood (Wooldridge, 2016).

The dependent variable in this model is a dummy variable that takes value 1 if the amputee reported a higher QoL for himself/herself than to a peer and 0 if he/she reports the same or a smaller value. We control for duration, personal characteristics, and type of amputation, and estimate the model with robust standard errors.

We use the same estimation to analyse the difference between amputees reported QoL and hypothetical QoL assigned by the control group:

$$P(\Delta QoL_{i-k} = 1|Z) = \Phi(\alpha + \beta duration_i + \delta X_i + \gamma\ type\ of\ amp_i)$$

and

$$P(\Delta QoL_{i-k} = 0|Z) = 1 - \Phi(\alpha + \beta duration_i + \delta X_i + \gamma\ type\ of\ amp_i)$$

where QoL_{i-k} is a dummy variable that takes value 1 if the amputee reports a QoL higher than the public, and 0 if the reported value is the same or lower.

The type of amputation suffered by an individual might be considered endogenous in our estimation, as it might affect the process of adaptation. However, we assume the variable is not endogenous and is not leading to any bias in our estimations. Furthermore, we rarely obtain statistically significant results for the effect of the type of amputation on QoL. However, measuring the quality of life of individuals with disability might be endogenous, regardless of the type of endogeneity. We do not have enough control variables to correct for endogeneity in the treatment group, but we do control for disability and other variables that might contribute to biased QoL assessment (such as cause or type of amputation). Endogeneity might be an issue soon after the individual became disabled, and his/her QoL assessment might change over time. However, we only use the most recent QoL valuation in order to avoid the recollection bias. Moreover, when we compare the treatment and control group, we are specifically interested in analysing the gap between their evaluations to hypothesise what would explain the widely-researched difference.

[8] The choice between probit and logit models was based on the log-likelihood criteria.

When insignificant coefficients were obtained, some of the personal characteristics included in the analysis had to be re-grouped due to small number of observations. Accordingly, *white* was defined as a dummy variable taking value 1 if ethnicity was white and 0 otherwise, *higher education* was defined as a dummy variable taking value 1 if the individual had a bachelor, college or postgraduate degree and 0 otherwise, *married* was defined as a dummy variable taking value 1 if the individual was married or in a civil partnership, and *employed* was defined as a dummy variable taking value 1 if the individual was a business owner, employed or self-employed.

2.5 Results

Our first estimation analyses the impact of duration on reported quality of life by amputees and the results are presented in **Table 5.**[9] We present the results of different estimations, depending on the controls included (A: all controls were included, C: other medical conditions and pain were excluded as variables were not significant, D: age was also excluded due to heteroscedasticity, E: white, married, female and number of children were further excluded as variables were not significant). Two separate models where implemented to correct for heteroscedasticity (estimation B) and estimate QoL in logarithmic form (estimation F).[10] In all estimations, our main variable of interest, *duration*, is positive and statistically significant, proving the existence of adaptation for amputees. The longer the duration since amputation, the higher are the reported QoL values by the amputees, *ceteris paribus*. While the *duration* coefficient is smaller in the heteroscedasticity corrected estimation (column B in **Table 5**), in all other estimations, the coefficient is similar; each additional month since amputation increases reported QoL by approximatively 0.18 points on average, *ceteris paribus*. An interaction variable between type of occupation and duration was also included (results shown in Appendix 2.8.22.8.2). Although the interaction is not statistically significant for all types of occupation, we obtain that the employed and retired individuals report lower QoL with increasing length of time living with the amputation, while students report higher QoL with increasing duration. This finding is interesting as on average, employed and retired individuals report higher QoL while students report negative QoL, compared to base category (individuals who reported themselves as 'disabled' as occupation). As such, although employed and retired are reporting higher QoL compared to individuals who are registered as disabled, with increasing time living with a disability, they are reporting lower QoL (and vice versa for students).

[9] Complete results including all control variables are available in Appendices 2.8.2-2.8.6

[10] Certain control variables, less significant for the analysis, such as type of payment or health insurance, were dropped in some estimations as including these controls was leading to insignificant results. Also, some variables were interacted with *duration* in some estimations (for example when we analyse the gaps between own QoL assessment and peers' QoL or own QoL assessment and control group's QoL for amputees, to verify if certain controls have a different impact depending on length of time living with amputation. As the interaction variables were rarely significant, these are not included in the main results and are presented in appendices for completeness.

Table 5. Adaptation estimation – OLS

Variable	A	B: heterosk. corrected	C	D	E	F: logs
Duration	0.1931* (0.0796)	0.1645* (0.0743)	0.2023** (0.0700)	0.1871** (0.0554)	0.1812** (0.0682)	8.4987*** (2.2942)
Cause of amputation	1.9241 (4.0836)	2.1766 (3.6579)	1.2217 (4.1873)	1.0572 (3.9325)	1.7064 (4.0889)	1.8986 (4.0938)
Lower amputation	-5.3753 (6.7033)	-6.2298 (6.9090)	-6.8579 (6.9853)	-6.8343 (6.8411)	-5.6381 (6.9602)	-5.4646 (6.8851)
Two or more amputations	2.1898 (8.1785)	1.0584 (8.2334)	0.9977 (8.3440)	0.7602 (8.1575)	0.1034 (8.0189)	1.7686 (7.9956)
Other med conditions	-4.2595 (4.9157)	-4.3526 (4.3368)				-4.8328 (4.6571)
Comorbidities	-8.2113 (5.1113)	-5.9536 (4.5338)	-9.1849+ (5.1288)	-9.0856+ (4.9862)	-7.6522 (4.9170)	-7.5681 (4.9425)
Pain	-0.04766 (0.0808)	-0.03330 (0.0778)				-0.06365 (0.0816)
Female	-1.0647 (4.8148)	-2.1673 (4.5018)	-1.0458 (4.7419)	-1.3777 (4.5316)		-0.9213 (4.5577)
Higher education	10.656* (5.3246)	10.847* (4.4448)	11.274* (5.2395)	11.735* (4.7442)	10.249* (4.8547)	10.787* (5.1769)
Observations	91	91	91	91	91	91
R-squared	0.28	0.29	0.27	0.26	0.23	0.31
Adjusted R-squared	-0.0094	-0.0014	0.0022	0.026	0.037	0.036

Control variables: age, number of children, ethnicity, other medical conditions. Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

After proving that adaptation exists in the case of amputees, we are now analysing the adaptation time frame. For this purpose, we tested the difference in QoL between those that had the amputation for less than 2 (5) years with those that had the condition for longer than these reference time points. We present the results for the 2 years' reference point in **Table 6** and for 5 years' in **Table 7**. Different specifications are included in both sets of estimations (controls were excluded as these were not significant in any estimation): A: white was not included, B: other medical conditions and white were excluded, C: use of prosthetics was excluded, D: other medical conditions, use of prosthetics and white were excluded.

Although the coefficient of *duration 2 years*, which compares those that had an amputation for longer than this period to those that had the condition for less, is positive in both estimations, we observe that this coefficient is only significant at 10% level of significance. Nevertheless, the results confirm that those with longer duration report higher QoL by more than 20 points on the scale from 0 to 100, on average.

Table 6. Duration of less than 2 years compared to more than 2 years – OLS

Variable	A	B	C	D
Duration 2 years	22.642+ (12.1541)	21.889+ (12.1800)	23.125+ (12.0975)	22.370+ (11.9515)
*Duration 2 *Duration*	-1.1418 (0.7823)	-1.0322 (0.7551)	-1.1529 (0.7753)	-1.0723 (0.7230)
Duration	1.1486 (0.7823)	1.0375 (0.7541)	1.1593 (0.7755)	1.0775 (0.7222)
Cause of amp	1.4599 (4.1632)	1.3487 (4.1920)	1.3829 (3.7815)	1.0114 (3.8639)
Lower amputation	-7.5313 (7.8776)	-7.7064 (8.0990)	-5.8590 (5.5413)	-5.8359 (5.6682)
Two or more amputations	0.1087 (8.0339)	0.09918 (8.2459)	1.6811 (6.4316)	1.7326 (6.5871)
Other med conditions	-2.8120 (4.4007)		-3.0182 (4.3572)	
Comorbidities	-9.4036* (4.0271)	-9.7831* (4.0331)	-9.4395* (4.0109)	-9.6298* (4.0360)
Pain	-0.06436 (0.0723)	-0.06849 (0.0714)	-0.06515 (0.0718)	-0.07188 (0.0709)
Female	-1.2771 (4.3886)	-1.2784 (4.3628)	-1.4503 (4.4193)	-1.3184 (4.3280)
Higher education	10.472* (4.2818)	10.566* (4.2844)	10.477* (4.3138)	10.520* (4.2747)
Observations	91	91	91	91
R-squared	0.24	0.24	0.24	0.24
Adjusted R-squared	0.067	0.074	0.067	0.084

Control variables: gender, age, occupation, education, marital status, number of children, use of prosthetics, provider of medical treatment. Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

More robust results are obtained when we analyse a longer period of time with the amputation, as the results in the following table show. Individuals with an amputation for more than 5 years report higher QoL by at least 17 points on the 0-100 scale, compared to those with the amputation for less than 5 years. These results are significant at 5% level of significance in all estimations.

Table 7. Duration of less than 5 years with more than 5 years – OLS

Variable	A	B	C	D
Duration 5 years	17.830* (8.8249)	18.127* (8.7071)	18.139* (8.9323)	18.307* (8.7040)
*Duration 5*duration*	-0.2565 (0.2211)	-0.2739 (0.2172)	-0.2660 (0.2222)	-0.2785 (0.2165)
Duration	0.2539 (0.2201)	0.2705 (0.2167)	0.2632 (0.2212)	0.2750 (0.2161)
Cause of amputation	2.4564 (4.0423)	2.2421 (4.0751)	2.2872 (3.6950)	1.8796 (3.7485)
Lower amputation	-6.9215 (7.9763)	-7.1655 (8.1091)	-4.9151 (5.5329)	-5.0203 (5.5889)
Two or more amputations	-1.2692 (7.8008)	-1.1660 (8.0111)	0.6028 (6.2748)	0.6824 (6.3830)
Other med conditions	-2.1592 (4.1582)		-2.3520 (4.1511)	
Comorbidities	-9.0064* (3.9948)	-9.1932* (4.0163)	-8.9751* (3.9887)	-9.0135* (4.0288)
Pain	-0.08201 (0.0735)	-0.08332 (0.0724)	-0.08302 (0.0731)	-0.08758 (0.0718)
Female	-0.07859 (4.4472)	-0.2868 (4.3979)	-0.2798 (4.5185)	-0.3041 (4.350)
Higher education	9.5519* (4.0982)	9.7193* (4.0887)	9.5257* (4.1559)	9.6248* (4.1067)
Observations	91	91	91	91
R-squared	0.25	0.25	0.25	0.25
Adjusted R-squared	0.079	0.088	0.079	0.098

Control variables: gender, age, occupation, education, marital status, number of children, use of prosthetics, provider of medical treatment. Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

Table 8 presents the results of estimating the differences between amputees own QoL and the QoL assigned by amputees to individuals with the same type of amputation. In this analysis, the dependent variable is a dummy that takes value 1 if amputees report higher QoL values for themselves than values attributed to peers. We present the results of different estimations, depending on the controls included (A: all controls were included – except for combinations with duration in logarithmic format, B: other medical conditions and health insurance provider were excluded as variables were not significant, C: all controls were included, D: other medical conditions and health insurance provider were excluded as variables were not significant). Estimations C and D include duration in logarithmic format.

In all estimations, *duration* has a negative and statistically significant effect on the probability that amputees report higher QoL values for themselves compared to QoL reported for peers. As such, *with each additional month passing by, amputees are more likely to report closer values to those assigned to peers, which we interpret as acknowledgement of adaptation*.

In this estimation, we observe that comorbidities and self-reported level of pain are also significant; those that present comorbidities report similar or lower values for peers to themselves, and higher levels of pain is associated with a positive difference between own QoL and values assigned to peers.

Table 8. Difference between own QoL and QoL assigned to peer – Probit

Variable	A	B	C: logs	D: logs
Duration	-0.0031*	-0.0021+	-0.777*	-0.684*
	(0.0013)	(0.0011)	(0.3608)	(0.2831)
Cause of amputation	0.512	0.333	0.657+	0.393
	(0.3901)	(0.3642)	(0.3995)	(0.3728)
Lower amputation	-0.851	-0.849	-4.083+	-3.593*
	(0.6766)	(0.6013)	(2.1369)	(1.7726)
Two or more amputations	-0.203	-0.494	1.485	1.172
	(0.8357)	(0.7361)	(4.3019)	(3.4607)
Other med conditions	0.736+		0.372	
	(0.4134)		(0.4023)	
Comorbidities	-1.748***	-1.084**	-1.626***	-1.145**
	(0.4818)	(0.4039)	(0.4848)	(0.4029)
Pain	0.0138+	0.0153*	0.0125	0.0143*
	(0.0071)	(0.0066)	(0.0076)	(0.0068)
Female	-1.025*	-0.519	-0.846+	-0.366
	(0.4597)	(0.4422)	(0.4952)	(0.4799)
Higher education	1.735***	1.047**	1.452***	0.884*
	(0.4333)	(0.3853)	(0.4231)	(0.3712)
Observations	87	89	87	89
Pseudo R-squared	0.33	0.25	0.34	0.27
ll	-30.7083	-36.3846	-30.0417	-35.3061
chi2	36.4557	30.9829	48.8704	32.6397

Marginal effects reported. Control variables: gender, age, occupation, education, marital status, number of children, use of prosthetics, provider of medical treatment. Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

The results of the estimation on the gap between the amputees' QoL and the public's reported QoL are presented in **Table 9**. As in the previous estimation, the dependent variable takes value 1 if the difference between the evaluations is positive, and 0 when amputees report the same or lower values than the control group. We present the results of different estimations, depending on the controls included (A: pain combined with duration was excluded as it was not found significant in any estimation, B: health insurance provider, type of payment and pain combined with duration were excluded as variables were not significant, C: use of prosthetics, health insurance provider, and type of payment were excluded as variables were not significant, D: use of prosthetics, health insurance provider, type of payment and pain combined with duration were excluded as variables were not significant). Estimations E-H include duration in logarithmic format and the same specifications as estimations A-D,

The results confirm literature findings, as the *duration* coefficient is positive and statistically significant in all estimations; *each additional month increases the likelihood that amputees report higher values than the controls, thus proving that adaptation is not a factor considered by the public when assessing QoL of patients.*

Table 9. Difference between amputees' QoL and the public's reported QoL - Probit

Variable	A	B	C	D	E: logs	F: logs	G: logs	H: logs
Duration	0.006113* (0.0028)	0.006689* (0.0028)	0.006187* (0.0030)	0.003628* (0.0017)	0.5222** (0.2000)	0.5445** (0.2020)	0.5365** (0.2032)	0.5180** (0.1856)
Cause of amputation	0.3220 (0.3177)	0.3242 (0.3219)	0.2624 (0.3107)	0.2491 (0.3140)	0.3386 (0.3340)	0.3193 (0.3332)	0.2166 (0.3095)	0.2247 (0.3111)
Lower amputation	-0.3973 (0.7960)	-0.2746 (0.8620)	0.1788 (0.6259)	-0.3050 (0.3958)	-0.9820 (0.7126)	-0.9869 (0.7863)	-0.2827 (0.4218)	-0.2860 (0.4203)
Two or more amputations	0.9001 (1.1916)	1.1977 (1.2065)	1.6881 (1.0523)	1.1607* (0.5912)	0.3364 (0.7882)	0.3406 (0.8454)	1.1352+ (0.6123)	1.1242+ (0.6053)
Other med conditions	-0.1248 (0.3637)	-0.1373 (0.3509)	-0.2068 (0.3423)	-0.2666 (0.3343)	-0.2290 (0.3399)	-0.2488 (0.3362)	-0.2832 (0.3287)	-0.2781 (0.3287)
Comorbidities	-0.8123* (0.3744)	-0.7288* (0.3606)	-0.6824* (0.3461)	-0.6842* (0.3421)	-0.6967+ (0.3602)	-0.6134+ (0.3482)	-0.6030+ (0.3352)	-0. 6024+ (0.3356)
Pain	-0.002104 (0.0062)	-0.003920 (0.0059)	-0.006069 (0.0095)	-0.006733 (0.0062)	-0.005513 (0.0062)	-0.006317 (0.0060)	-0.007968 (0.0083)	-0.009028 (0.0063)
Female	-0.7578+ (0.4376)	-0.7095+ (0.4081)	-0.6865+ (0.3920)	-0.5714 (0.3590)	-0.6327 (0.3939)	-0.5686 (0.3726)	-0.5917+ (0.3517)	-0.5912+ (0.3514)
Higher education	0.4269 (0.3605)	0.4002 (0.3438)	0.3189 (0.3524)	0.2977 (0.3359)	0.4801 (0.3326)	0.4546 (0.3241)	0.3772 (0.3252)	0.3816 (0.3265)
Observations	89	89	91	91	89	89	91	91
Pseudo R-squared	0.25	0.23	0.20	0.19	0.26	0.25	0.21	0.21
ll	-43.2287	-44.2680	-46.7391	-47.2453	-42.6472	-43.4307	-45.9496	-45.9732
chi2	33.3953	30.1931	22.0984	20.4799	30.0423	29.4171	25.9131	25.6295

Marginal effects reported. Control variables: gender, age, occupation, education, marital status, number of children, use of prosthetics, provider of medical treatment. Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

2.6 Conclusion

The analysis presented in this chapter aimed to assess whether there is a statistical difference between patients' QoL evaluations, represented by a sample of amputees, and hypothetical evaluations conducted by a sample of the general public. The available data allowed us to also look into how amputees assess the QoL of other individuals living with the same condition. Indirectly, this estimation probes whether patients are aware of adaptation by imputing it to others.

The results obtained in the first model matched existing literature findings with respect to patients' adaptation, estimated through the impact of duration, statistically significant in all estimations. As the estimated regression output presented in **Table 5** shows, each additional month since the amputation determines an increase in reported QoL of approximately 0.18 points on a 0-100 scale. In logarithmic form, this translates to an increase of 8.50% in reported QoL. Moreover, we obtain that amputees adapt from as early as 2 years after amputation, with more robust results at the 5 years' mark.

The adaptation estimations analysed controlled also for personal characteristics. While the type of amputation does not result in differences in reported QoL among amputees, it is found that individuals' occupation and education are significant.[11] We obtained that retired amputees have the highest reported QoL, while students are at the lower extreme, matching existing literature findings (Groot, 2000). Moreover, this confirms the existence of adaptation, as ageing is thought to be a contributing factor to people adaptation and accepting their personal conditions. We also obtain that those with higher education report higher QoL values.

The literature on the topic of evaluating HRQoL confirms that there is reference bias as well (Groot 2000, 2003), in that people report values depending on the term of comparison they have, either directly stated in the question, or implicitly, comparing themselves with individuals with the same condition or the same personal characteristics. As evaluations are relative, we test for the difference between amputees own reported QoL and the values they report for peers. We find that the longer the time an individual has lived with an amputation, the closer he/she will have evaluated their own QoL to that assigned to peers, which we interpret as acknowledgement of adaptation. The results of this analysis are reported in **Table 8** in the previous section.

In estimating this model, we also obtained that amputees living with comorbidities and women would more likely report closer values for themselves compared to those assigned to peers. However, amputees with higher education would more likely report higher QoL values for themselves compared to those reported for peers.

Lastly, we analysed the determinants of the gap between QoL values reported by amputees and hypothetical QoL values reported by the general public (**Table 9**). In this model *duration since event* is the main determinant in all estimations presented in **Table 9**. The longer the duration since adaptation, the higher are, on average, the QoL values reported by the amputees compared to the hypothetical QoL values reported by the control group. We also obtained that

[11] Complete results for all controls included in estimations are available in Appendices 2.8.2-2.8.6

amputees with comorbidities and women are more likely to report lower QoL compared to values reported by the general public.

These estimations emphasize the importance of adaptation in health states valuations. We prove that adaptation exists in the case of amputees and we analyse the timeline of adaptation. More importantly, we find that amputees acknowledge adaptation. As time since event increases, amputees are more likely to report similar QoL for themselves and other amputees. This finding is relevant in moving forward and improving measurements of QoL. If patients themselves acknowledge adaptation, their evaluations can be considered in health care decision making. This inference could be easily tested and replicated in patients with different conditions, such as diabetes or urology conditions, where adaptation has already been proven.

Inspecting the summary statistics of the treatment group, we find two other interesting findings. Firstly, amputees predict quite closely their quality of life over a 10-year span; however, differentiating by cause of amputation, we observe that those with a medical-related amputation overestimate their future quality of life by a much higher margin compared to those with an injury-related amputation. We hypothesis that this difference originates from the anticipation an individual with a medical-related amputation has on his future condition. Most of the patients with a medical-related amputation in our dataset had diabetes and these patients have an expectation that at some point they might suffer an amputation. We infer that by expecting this outcome, patients assume a fast recovery, expectations that are not met in reality. However, these inferences are based on summary statistics and due to the nature of the data, could not be tested empirically.

Secondly, we observe that amputees' quality of life average score is very close to that of the control group, even slightly higher at 76.73 compared to 76.63. However, when asked to assess their own quality of life had they did not have the amputation, they provided much higher scores (on average 90.28) compared to what the control group has provided for themselves (please see **Table 4** in section 2.3). As such, although their scores are on average the same to those of individuals with no amputation and similar characteristics as themselves, amputees think they would be enjoying a better quality of life than they actually would. Also, amputees believe that those born with the same amputation as themselves would be in a worse condition, rating their quality of life with at least 10 points difference (please see **Table 4** in section 2.3). One hypothesis is that respondents might believe they are doing better as they had at least enjoyed life without the amputation, as compared to those who were born with it. Again, these findings are based on summary statistics and conclusions can only be inferred.

There are limitations that need to be acknowledged regarding our estimations. Most of these are related to the small sample size available that did not allow us to use more advanced empirical techniques. Also, as individuals are asked to recollect their QoL before completing the survey, there is a portion of the obtained data that cannot be used in statistical inferences. There is also the potential endogeneity issue when analysing QoL of amputees which due to lack of data could not be corrected. However, these data show us that, firstly, amputees adapted, and also, they predicted accurately their future QoL values. More research is required, ideally on a longitudinal dataset, to obtain a rate of adjustment for adaptation that could be

implemented in the HRQoL evaluations. Moreover, current analysis can be improved by analysing a sample of a treatment group at time of event, rather than including recollected quality of life assessments. If the same findings are obtained using a longitudinal dataset for other conditions as well, we infer that patients' HRQoL assessments would be more relevant for health care decision making, as the general public does not account for adaptation and are prone to focusing illusion in their assessment. Nonetheless, this analysis complements existing research on adaptation to health states and provides important inferences that once tested with other conditions as well, can help improve quality of life measurements.

2.7 References

1. Ayton, P., Pott, A., Elwakili, N. (2007) 'Affective forecasting: why can't people predict their emotions?', *Thinking and Reasoning*, Vol. 13, No. 1, pp. 62-80.
2. Baji, P., Biro, A. (2018) 'Adaptation or recovery after health shocks? Evidence using subjective and objective health measures', Health Economics, pp. 1–15. https://doi.org/10.1002/hec.3644
3. Baron, J., Asch, D., Fagerlin, A., Jepson, C. (2003) 'Effect of assessment method on the discrepancy between judgements of health disorders people have and do not have: a web study', *Medical Decision Making*, Vol. 23, No. 5, pp. 422-434.
4. Boyd, N., Sutherland, H., Heasman, K., Tritchler, D., Cummings, B. (1990) 'Whose utilities for decision analysis?', *Medical Decision Making*, Vol. 10., pp. 58-67.
5. Brazier, J., Akehurst, R., Brennan, A., Dolan, P., Claxton, K., McCabe, C., Sculpher, M.m Tsuchyia, A. (2005) 'Should patients have a greater role in valuing health states?', *Applied Health Economics and Health Policy*, Vol. 4, Issue 4, pp. 201-208.
6. Brickman, P., Coates, D. (1978) 'Lottery winners and accidents victims: is happiness relative?', *Journal of Personality and Social Psychology*, Vol. 36, No. 8, pp. 917-927.
7. Buick, D. L., Petrie, K. J. (2002) ' "I know just how you feel": the validity of healthy women's perceptions of breast-cancer patients receiving treatment', *Journal of Applied Social Psychology*, Vol. 32, No. 1, pp. 110-123.
8. Contoyannis, P., Jones, A. M., Rice, N. (2004) 'The dynamics of health in the British Household Panel Survey', *Journal of Applied Econometrics*, Vol. 19, pp. 473-503.
9. Cubi-Molla, P., Jofre-Bonet, M., Serra-Sastre, V. (2015) 'Adaptation to health states: sick yet better off?', working paper, *Department of Economics, City University London*.
10. Damschroder, L. J., Zikmund-Fisher, B. J., Ubel, P. A. (2005) 'The impact of considering adaptation in health state valuation', *Social Science and Medicine*, Vol. 61, pp. 267-277.
11. De Hond, A., Bakx, P., Versteegh, M. (2018) 'Can time heal all wounds? An empirical assessment of adaptation to functional limitations', *Netspar*, DP 03/2018-04
12. De Wit, G. A., Busscjbach, J. V, De Charro, F. T. (2000) 'Sensitivity and perspective in the valuation of health status: whose values count?', *Health Economics*, Vol. 9, pp. 109-126.
13. Devlin NJ, Shah KK, Feng Y, Mulhern B, van Hout B (2017) 'Valuing health-related quality of life: An EQ-5D-5L value set for England', *Health Economics, pp*. 1–16 *(*https://doi.org/10.1002/hec.3564*)*
14. Dolan, P. (1999) 'Whose preferences count?', *Medical Decision Making*, Vol. 19, pp. 482-486.
15. Dolan, P., Kahneman, D. (2008) 'Interpretations of utility and their implications for the valuation of health', *The Economic Journal*, Vol. 118, pp. 215-234.
16. Dolan, P. (2011) 'Thinking about it: thoughts about health and valuing QALYs', *Health Economics*, Vol. 20, pp. 1407-1416.

17. Essink-Bot, M. L., Bonsel, G. J., van der Maas, P. J. (1990) 'Valuation of health state by the general public: feasibility or a standardized measurement procedure', *Social Science and Medicine*, Vol. 31, No. 11, pp. 1201-1206.
18. Gupta, P., Mishra, T., O'Leary, N., Parhi, M. (2015) 'The distributional effects of adaption and anticipation to ill health on subjective wellbeing', *Economics Letters,* http://dx.doi.org/10.1016/j.econlet.2015.09.010
19. Groot, W. (2000) 'Adaptation and scale of reference bias in self-assessments if quality of life', *Journal of Health Economics*, Vol. 19, pp. 403-420.
20. Groot, W. (2003) 'Scale of reference bias and the evolution of health', *The European Journal of Health Economics*, Vol. 4, No. 3, pp. 176-183.
21. Hernandez-Quevedo, C, Jones, A. M., Rice, N. (2008) 'Reporting bias and heterogeneity in self assessed health. Evidence from the British Household Panel Survey' *Cuadernos Económicos de ICE,* Vol. 75**,** pp. 63-97.
22. Kruger J. (1999). Lake Wobegon be gone! The "below-average effect" and the egocentric nature of comparative ability judgments. *Journal of Personality & Social Psychology, Vol. 77, No. 2*, pp. 221–32.
23. Lacey, H. P., Fagerlin, A., Loewenstein, G., Smith, D. M., Riis, J., & Ubel, P. A. (2008). Are they really that happy? Exploring scale recalibration in estimates of well-being. *Health Psychology*, Vol. 27*, No.* 6, pp. 669-675.
24. Lucas, R. E. (2007) 'Long-Term Disability Is Associated With Lasting Changes in Subjective Well-Being: Evidence From Two Nationally Representative Longitudinal Studies', *Journal of Personality and Social Psychology*, Vol. 92, No. 4, pp. 717–730.
25. Lunde, L. Loken, K. V. (2011) '" How are you feeling"? Assessing reporting bias in a subjective measure of healh by quantile regression', *Department of Economics, University of Bergen,* Working paper No. 8.
26. McTaggart-Cowan, H., Tsuchiya, A., O'Cathain, A., Brazier, J. (2011) 'Understanding the effect of disease adaptation information on general population values for hypothetical health states', *Social Sciences and Medicine*, Vol. 72, pp. 1904-1912.
27. Menzel, P., Dolan, P., Richardson, J., Olsen, J. A. (2002) 'The role of adaptation to disability and disease in health state valuation: a preliminary normative analysis', *Social Science and Medicine*, Vol. 55, pp. 2149-2158.
28. Oswald, A. J., Powdthavee, N. (2008) 'Does happiness adapt? A longitudinal study or disability with implications for economists and judges', *Journal of Public Economics*, Vol. 92, pp. 1061-1077.
29. Pagan-Rodriguez, R. (2010) 'Onset of disability and life satisfaction: evidence from the German Socio-Economic Panel', *Eur J Health Econ*, 11:471–485.
30. Peeters, Y., Stiggelbout, A. M. (2010) , 'Health state valuations of patients and the general oublic analystically compared: a meta-analytical comparison of patient and population health state utilities', *Value in Health*, Vol. 13, No. 2, pp. 306-309.
31. Peeters, Y., Vlieland, T. P., Stiggelbout, A. M. (2011) 'Focusing illusion, adaptation and EQ-5D health state descriptions: the difference between patients and public', *Health Expectations*, Vol. 15, pp. 367-378.

32. Powdthavee, N. (2009) 'What happens to people before and after disability? Focusing effects, lead effects, and adaptation in different areas of life', *Social Science & Medicine*, Vol. 69, pp. 1834–1844.
33. Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., Ubel, P. A. (2005) 'Ignorance of hedonic adaptation to hemodialysis: a study using ecological momentary assessment', *Journal of Experimental Psychology: General*, Vol. 134, No. 1, pp. 3-9.
34. Sacket, D. L., Torrance, G. W. (1978) 'The utility of different health states as perceived by the general public', *Journal of Chronic Diseases*, Vol. 31, pp. 697-704.
35. Schkade, D. A., Kahneman, D. (1998) 'Does living in California make people happy? A focusing illusion in judgements of life satisfaction', *Psychological Science*, Vol. 9, No. 5, pp. 340-346.
36. Schulz, R. and S. Decker (1985), 'Long-term Adjustment to Physical Disability: The Role of Social Support, Perceived Control, and Self-blame', *Journal of Personality and Social Psychology Vol. 48*, No. 5, pp. 1162–1172.
37. Stamuli, E. (2011) 'Health outcomes in economic evaluation: who should value health?', *British Medical Bulletin*, pp. 1-14.
38. Tversky, A., Kahneman, D. (1981) 'The Framing of Decisions and the Psychology of Choice', *Science*, Vol. 211, No. 4481, pp. 453-458
39. Ubel, P. A, Loewenstein, G., Jepson, C. (2003) 'Whose quality of life? A commentary on exploring discrepancies between health state evaluations of patients and the general public', *Quality of Life Research*, Vol. 12, No. 6, pp. 599-607.
40. Ubel, P. A, Loewenstein, G., Jepson, C. (2005) 'Disability and sunshine: can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation?', *Journal of Experimental Psychology*, Vol. 11, No. 2, pp. 111-123.
41. Walsh, E. and Ayton, P. (2009a). What would it be like for me and for you? Judged impact of chronic health conditions on happiness. *Medical Decision Making*, Vol. 29, No. 1, pp. 15-22.
42. Walsh, E. and Ayton, P. (2009b). My Imagination Versus Your Feelings: Can Personal Affective Forecasts Be Improved by Knowing Other Peoples' Emotions? *Journal of Experimental Psychology: Applied*, Vol. 15, 351-360
43. Williams, R. (2015) 'Heteroskedasticity', published online. Available at: https://www3.nd.edu/~rwilliam/stats2/l25.pdf. Accessed on 3 February 2016.
44. Wooldridge, J. M. (2016) 'Introductory Econometrics', Chapter 17. 'Limited Dependent Variable Models and Sample Selection Corrections', Boston, MA, Cengage Learning.

2.8 Appendices

2.8.1 Surveys questions

Amputees' survey

What is your age?

What is your gender?

What is your occupation?

What is your country/region of residence?

What best describes your civil status?

How many children do you have?

What is the highest level of education achieved?

What is your ethnicity?

Is your limb loss acquired or congenital?

Please give details of the area(s) of amputation

Upper Body Limb loss

- Transcarpal amputation
- Wrist disarticulation
- Transradial amputation
- Elbow disarticulation
- Transhumeral amputation
- Shoulder disarticulation
- Forequarter amputation

Lower Body Limb loss

- Partial foot amputation
- Symes
- Ankle disarticulation
- Transtibial amputation
- Knee disarticulation
- Transfemoral amputation
- Hip disarticulation
- Transpelvic amputation

Other type of amputation

Is your limb loss...

- Unilateral - left side
- Unilateral - right side
- Bilateral
- Cross-site

Month and year amputation happened

What was the reason/cause of the amputation

How long after the reason/cause did the amputation occur

Did you have other injuries/medical implications as a result of the same reason/cause?

Prosthetics - have you used them in the past, do you currently use them, do you intend to use them in the future?

Who provides medical treatment?

Do you have any other medical conditions?
How much pain do you currently experience that is associated with your limb loss? 0 (no pain) to 100 (incapacitating pain)
How much phantom pain do you currently experience that is associated with your limb loss? 0 (no pain) to 100 (incapacitating pain)

Own QoL

What was your QOL... 0(QOL as bad as death) to 100 (QOL as good as perfect health)

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5 years before your amputation
3 years before your amputation
1 year before your amputation
6 months before your amputation
1 month before your amputation

Was was/is/will be your QOL

1 month after your amputation
3 months after your amputation
6 months after your amputation
12 months after your amputation
2 years after your amputation
3 years after your amputation
4 years after your amputation
5 years after your amputation
10 years after your amputation
10+ years after your amputation

Others' QoL

What is the average QOL of people with

forequarter amputation - unilaterally
forequarter amputation - bilaterally
shoulder disarticulation - unilaterally
shoulder disarticulation - bilaterally
transhumeral amputation
elbow disarticulation
transradial amputation
wrist disarticulation
transcarpal amputation
transpelvic amputation
hip disarticulation
transfemoral amputation
knee disarticulation
transtibial amputation
ankle disarticulation
Symes
partial foot amputation

What is the average QOL of people who were born with the same limb loss as yourself?

What would your current QOL be if the reason/cause for your limb loss had never occurred?
What is the average QOL of people who are similar in age and background to yourself who have not had limbs amputated and were not born with limb absence?

Control group survey

What is your age?
What is your gender?
What is your occupation?
What is your country/region of residence?
What best describes your civil status?
How many children do you have?
What is the highest level of education achieved?

What is the highest level of education achieved?

What is your ethnicity?

Do you know somebody who has an amputation?

Do you consider yourself lucky with respect to others around you in terms of health?

Do you consider yourself lucky with respect to others around you in terms of income?

Do you consider yourself an optimist?

Imagine you have an upper limb amputation caused by an accident. We would like you to indicate for the following periods what your quality of life be.

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 1 month after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 6 months after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 12 months after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 2 years after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 5 years after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 10 years after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): More than 10 years after the amputation

What would you consider the average quality of life would be for people with lower limb amputation?

What would you consider the average quality of life would be for people with two or more amputations?

What would be the average quality of life of people who were born with the same hypothetical limb as yourself?

What would be the average quality of life of people who are similar in age and background to yourself?

Imagine you have an upper limb amputation as a consequence of a disease. We would like you to indicate for the following periods what your quality of life be.

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 1 month after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 6 months after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 12 months after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 2 years after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 5 years after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 10 years after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): More than 10 years after the amputation

What would you consider the average quality of life would be for people with lower limb amputation?

What would you consider the average quality of life would be for people with two or more amputations?

What would be the average quality of life of people who were born with the same hypothetical limb as yourself?

What would be the average quality of life of people who are similar in age and background to yourself?

Imagine you have a lower limb amputation caused by an accident. We would like you to indicate for the following periods what your quality of life be.

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 1 month after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 6 months after the amputation

What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 12

months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 2 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 5 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 10 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): More than 10 years after the amputation
What would you consider the average quality of life would be for people with upper limb amputation?
What would you consider the average quality of life would be for people with two or more amputations?
What would be the average quality of life of people who were born with the same hypothetical limb as yourself?
What would be the average quality of life of people who are similar in age and background to yourself?
Imagine you have a lower limb amputation as a consequence of a disease. We would like you to indicate for the following periods what your quality of life be.
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 1 month after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 6 months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 12 months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 2 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 5 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 10 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): More than 10 years after the amputation
What would you consider the average quality of life would be for people with upper limb amputation?
What would you consider the average quality of life would be for people with two or more amputations?
What would be the average quality of life of people who were born with the same hypothetical limb as yourself?
What would be the average quality of life of people who are similar in age and background to yourself?
Imagine you have two or more amputations caused by an accident. We would like you to indicate for the following periods what your quality of life be.
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 1 month after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 6 months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 12 months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 2 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 5 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 10 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): More than 10 years after the amputation
What would you consider the average quality of life would be for people with upper limb amputation?
What would you consider the average quality of life would be for people with lower limb amputation?
What would be the average quality of life of people who were born with the same hypothetical limb as yourself?

What would be the average quality of life of people who are similar in age and background to yourself?
Imagine you have two or more amputations as a consequence of a disease. We would like you to indi...
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 1 month after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 6 months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 12 months after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 2 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 5 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): 10 years after the amputation
What would be your quality of life (0 - as bad as death, 100 - as good as perfect health): More than 10 years after the amputation
What would you consider the average quality of life would be for people with upper limb amputation?
What would you consider the average quality of life would be for people with lower limb amputation?
What would be the average quality of life of people who were born with the same hypothetical limb as yourself?
What would be the average quality of life of people who are similar in age and background to yourself?

2.8.2 Adaptation estimation – OLS (complete results)

Variable	A	B: heterosk. corrected	C	D	E	F: logs
Duration	0.1931*	0.1645*	0.2023**	0.1871**	0.1812**	8.4987***
	(0.0796)	(0.0743)	(0.0700)	(0.0554)	(0.0682)	(2.2942)
Medical cause of amp.	1.9241	2.1766	1.2217	1.0572	1.7064	1.8986
	(4.0836)	(3.6579)	(4.1873)	(3.9325)	(4.0889)	(4.0938)
Lower body amp.	-5.3753	-6.2298	-6.8579	-6.8343	-5.6381	-5.4646
	(6.7033)	(6.9090)	(6.9853)	(6.8411)	(6.9602)	(6.8851)
Two or more amp.	2.1898	1.0584	0.9977	0.7602	0.1034	1.7686
	(8.1785)	(8.2334)	(8.3440)	(8.1575)	(8.0189)	(7.9956)
Other med. conditions	-4.2595	-4.3526				-4.8328
	(4.9157)	(4.3368)				(4.6571)
Comorbidities	-8.2113	-5.9536	-9.1849+	-9.0856+	-7.6522	-7.5681
	(5.1113)	(4.5338)	(5.1288)	(4.9862)	(4.9170)	(4.9425)
Pain	-0.04766	-0.03330				-0.06365
	(0.0808)	(0.0778)				(0.0816)
Employed	9.2605	9.6756	11.189	11.151+	9.7514	15.478
	(8.1673)	(7.9875)	(7.1494)	(6.6728)	(7.0127)	(13.6136)
Retired	23.159*	19.035*	23.867**	22.659**	22.876**	52.586**
	(9.8345)	(9.3873)	(8.9142)	(7.1196)	(7.3230)	(17.9575)
Student	-178.18**	-179.93*	-162.82*	-147.44*	-145.54*	-777.02**
	(65.2987)	(69.1725)	(64.4110)	(61.7151)	(64.3977)	(234.7725)
Unemployed	0.6725	-17.868	-5.6696	-8.9688	-5.4757	-53.060
	(38.5929)	(36.2146)	(40.5840)	(39.7441)	(33.2517)	(206.4126)
Housekeeper	9.3627	11.932	9.5487	9.0215	10.994	-0.7334
	(9.2517)	(8.5005)	(8.2880)	(7.6334)	(7.1972)	(20.9995)
*Employed*duration*	-0.1762*	-0.1512*	-0.1887**	-0.1758**	-0.1671*	-4.6896
	(0.0806)	(0.0750)	(0.0708)	(0.0581)	(0.0704)	(3.3770)
*Self-employed*duration*	-0.02556	-0.006172	0.02230	0.03107	-0.04318	-0.7457
	(0.0869)	(0.0766)	(0.0815)	(0.0727)	(0.0550)	(1.8748)
*Bussiness owner*duration*	-0.09771	-0.07462	-0.1225*	-0.1140*	-0.09568	0.3548
	(0.0655)	(0.0589)	(0.0572)	(0.0544)	(0.0624)	(2.0280)
*Retired*duration*	-0.1960*	-0.1625*	-0.2080**	-0.1929**	-0.1886**	-10.261**
	(0.0808)	(0.0751)	(0.0705)	(0.0574)	(0.0693)	(3.5585)
*Student*duration*	3.4545**	3.5560**	3.1934**	2.9589**	2.8078*	196.18**
	(1.1265)	(1.1809)	(1.1106)	(1.0897)	(1.1267)	(58.0727)
*Unemployed*duration*	-0.1655	-0.09078	-0.1569	-0.1356	-0.1501	5.8362
	(0.1355)	(0.1255)	(0.1320)	(0.1167)	(0.1087)	(35.4153)
*Housekeeper*duration*	-0.1151	-0.09623	-0.1331+	-0.1206+	-0.1127	1.3818
	(0.0810)	(0.0750)	(0.0703)	(0.0614)	(0.0730)	(4.8558)
White	-0.6730	-2.0628	-1.0908	-1.7775		-0.4759

Variable	A	B: heterosk. corrected	C	D	E	F: logs
	(4.3741)	(4.0298)	(4.4146)	(4.0886)		(4.1956)
Married	0.1063	2.2020	0.8853	1.0552		0.6243
	(5.0203)	(4.8171)	(4.8956)	(4.7982)		(4.7873)
Female	-1.0647	-2.1673	-1.0458	-1.3777		-0.9213
	(4.8148)	(4.5018)	(4.7419)	(4.5316)		(4.5577)
Higher education	10.656*	10.847*	11.274*	11.735*	10.249*	10.787*
	(5.3246)	(4.4448)	(5.2395)	(4.7442)	(4.8547)	(5.1769)
Age	-0.5532	-0.2076	-0.6414			-0.6037
	(1.4393)	(1.4420)	(1.4413)			(1.3024)
Age squared	0.004726	0.001990	0.005540			0.004894
	(0.0141)	(0.0140)	(0.0142)			(0.0129)
No children	2.5811	2.1082	2.8876	2.6543		2.1255
	(1.9373)	(1.8328)	(1.8626)	(1.8260)		(1.8093)
Constant	77.529*	67.846+	76.993*	60.693***	63.338***	59.751+
	(34.8571)	(36.7529)	(35.1355)	(11.2392)	(11.2126)	(31.3288)
Observations	91	91	91	91	91	91
R-squared	0.28	0.29	0.27	0.26	0.23	0.31
Adjusted R-squared	-0.0094	-0.0014	0.0022	0.026	0.037	0.036

Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

2.8.3 Duration of less than 2 years compared to more than 2 years – OLS (complete results)

Variable	A	B	C	D
Duration 2 years	22.642+	21.889+	23.125+	22.370+
	(12.1541)	(12.1800)	(12.0975)	(11.9515)
*Duration 2 *Duration*	-1.1418	-1.0322	-1.1529	-1.0723
	(0.7823)	(0.7551)	(0.7753)	(0.7230)
Duration	1.1486	1.0375	1.1593	1.0775
	(0.7823)	(0.7541)	(0.7755)	(0.7222)
Medical cause of amp.	1.4599	1.3487	1.3829	1.0114
	(4.1632)	(4.1920)	(3.7815)	(3.8639)
Lower body amp.	-7.5313	-7.7064	-5.8590	-5.8359
	(7.8776)	(8.0990)	(5.5413)	(5.6682)
Two or more amp.	0.1087	0.09918	1.6811	1.7326
	(8.0339)	(8.2459)	(6.4316)	(6.5871)
Other med. conditions	-2.8120		-3.0182	
	(4.4007)		(4.3572)	
Comorbidities	-9.4036*	-9.7831*	-9.4395*	-9.6298*
	(4.0271)	(4.0331)	(4.0109)	(4.0360)
Pain	-0.06436	-0.06849	-0.06515	-0.07188
	(0.0723)	(0.0714)	(0.0718)	(0.0709)
Employed	-3.1284	-2.5709	-2.8859	-2.2201
	(3.9549)	(3.8948)	(4.0018)	(3.9017)
Married	1.4362	1.3935	1.7556	1.4346
	(4.3768)	(4.3090)	(4.3615)	(4.2753)
Female	-1.2771	-1.2784	-1.4503	-1.3184
	(4.3886)	(4.3628)	(4.4193)	(4.3280)
Higher_education	10.472*	10.566*	10.477*	10.520*
	(4.2818)	(4.2844)	(4.3138)	(4.2747)
Age	-0.4879	-0.5538	-0.4362	-0.6304
	(1.0904)	(1.0936)	(1.1285)	(1.0431)
Age2	0.005478	0.005869	0.005008	0.006687
	(0.0110)	(0.0111)	(0.0112)	(0.0105)
No children	2.1931	2.3246	2.1111	2.2741
	(1.5633)	(1.5274)	(1.5613)	(1.5247)
Use_prosthetics	2.5377	2.8148		
	(6.5453)	(6.6522)		
White			-1.7544	
			(3.9310)	
Constant	66.248*	68.100*	66.354*	70.262*
	(29.4012)	(29.4002)	(29.9780)	(28.8060)
Observations	91	91	91	91
R-squared	0.24	0.24	0.24	0.24
Adjusted R-squared	0.067	0.074	0.067	0.084

Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

2.8.4 Duration of less than 5 years with more than 5 years – OLS (complete results)

Variable	A	B	C	D
Duration 5 years	17.830*	18.127*	18.139*	18.307*
	(8.8249)	(8.7071)	(8.9323)	(8.7040)
*Duration 5 years *duration*	-0.2565	-0.2739	-0.2660	-0.2785
	(0.2211)	(0.2172)	(0.2222)	(0.2165)
Duration	0.2539	0.2705	0.2632	0.2750
	(0.2201)	(0.2167)	(0.2212)	(0.2161)
Medical cause of amp.	2.4564	2.2421	2.2872	1.8796
	(4.0423)	(4.0751)	(3.6950)	(3.7485)
Lower body amp.	-6.9215	-7.1655	-4.9151	-5.0203
	(7.9763)	(8.1091)	(5.5329)	(5.5889)
Two or more amp.	-1.2692	-1.1660	0.6028	0.6824
	(7.8008)	(8.0111)	(6.2748)	(6.3830)
Other_med_conditions	-2.1592		-2.3520	
	(4.1582)		(4.1511)	
Comorbidities_derived	-9.0064*	-9.1932*	-8.9751*	-9.0135*
	(3.9948)	(4.0163)	(3.9887)	(4.0288)
Pain	-0.08201	-0.08332	-0.08302	-0.08758
	(0.0735)	(0.0724)	(0.0731)	(0.0718)
Employed	-3.1260	-2.5737	-2.7838	-2.1909
	(3.7959)	(3.6923)	(3.8738)	(3.7347)
married	0.6680	0.6726	0.9566	0.6897
	(4.1624)	(4.1050)	(4.2238)	(4.0613)
Female	-0.07859	-0.2868	-0.2798	-0.3041
	(4.4472)	(4.3979)	(4.5185)	(4.3510)
Higher_education	9.5519*	9.7193*	9.5257*	9.6248*
	(4.0982)	(4.0887)	(4.1559)	(4.1067)
Age	-0.4272	-0.4863	-0.3959	-0.5697
	(1.0698)	(1.0744)	(1.0977)	(1.0273)
Age2	0.004612	0.005030	0.004364	0.005907
	(0.0109)	(0.0110)	(0.0110)	(0.0104)
No children	2.0192	2.1290	1.9372	2.0735
	(1.5337)	(1.5061)	(1.5344)	(1.4992)
Use_prosthetics	3.0965	3.1922		
	(6.4447)	(6.5593)		
White			-1.6672	
			(3.8739)	
Constant	74.040*	74.521*	74.844*	77.322**
	(29.0205)	(29.0978)	(28.8761)	(27.8186)
Observations	91	91	91	91
R-squared	0.25	0.25	0.25	0.25
Adjusted R-squared	0.079	0.088	0.079	0.098

Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

2.8.5 Difference between own QoL and QoL assigned to peer – Probit (complete results)

Variable	peers1	peers2	peers3	peers4
Duration	-0.000440**	-0.000480+	-0.120*	-0.150*
	(0.0002)	(0.0002)	(0.0561)	(0.0617)
Lower body amp.	-0.0991	-0.163	-0.457+	-0.498*
	(0.0755)	(0.1045)	(0.2629)	(0.2173)
Two or more amp.	-0.0319	-0.134	0.120	0.160
	(0.1471)	(0.2290)	(0.1727)	(0.2614)
Medical cause of amp.	0.0803	0.0794	0.114	0.0905
	(0.0716)	(0.0901)	(0.0790)	(0.0889)
Pain	0.00197*	0.00350*	0.00193+	0.00315*
	(0.0010)	(0.0015)	(0.0011)	(0.0015)
Comorbidities_derived (d)	-0.220***	-0.222**	-0.220***	-0.223**
	(0.0642)	(0.0770)	(0.0652)	(0.0728)
Other_med_conditions (d)	0.0992+		0.0556	
	(0.0548)		(0.0595)	
Health insurance provider	-0.0952		-0.0769	
	(0.0652)		(0.0735)	
Used to use prosthetics, no intention to use again	0.0743*	0.108	0.0863*	0.136*
	(0.0377)	(0.0836)	(0.0405)	(0.0568)
Use to use prosthetics, might use again	-0.133	-0.203	-0.127	-0.141
	(0.2509)	(0.2692)	(0.1972)	(0.1978)
White	-0.0723	-0.112	-0.0813	-0.0979
	(0.0526)	(0.0777)	(0.0595)	(0.0756)
Married	0.127	0.121	0.155	0.144
	(0.0861)	(0.1069)	(0.0950)	(0.1089)
Higher_education	0.368***	0.282*	0.310**	0.226*
	(0.1104)	(0.1193)	(0.1090)	(0.1129)
Employed	-0.0627	-0.0853	-0.0829	-0.0873
	(0.0612)	(0.0831)	(0.0652)	(0.0772)
Female	-0.170+	-0.125	-0.147	-0.0834
	(0.0905)	(0.1134)	(0.0975)	(0.1164)
Age	-0.0235	-0.0242	-0.0183	-0.0301
	(0.0181)	(0.0240)	(0.0190)	(0.0247)
Age2	0.000327+	0.000350	0.000261	0.000407
	(0.0002)	(0.0003)	(0.0002)	(0.0003)
No children	0.0253	0.0458	0.0224	0.0497
	(0.0256)	(0.0372)	(0.0309)	(0.0392)
*Lower body amp.*log (duration)*			0.117+	0.142+
			(0.0672)	(0.0763)
*Two or more amp.*log (duration)*			-0.0424	-0.0526
			(0.1112)	(0.1262)

Variable	peers1	peers2	peers3	peers4
Observations	87	89	87	89
Pseudo R-squared	0.33	0.25	0.34	0.27
ll	-30.7083	-36.3846	-30.0417	-35.3061
chi2	36.4557	30.9829	48.8755	32.6397

Marginal effects. Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

2.8.6 Difference between amputees' QoL and the public's reported QoL – Probit (complete results)

Variable	A	B	C	D	E:logs	F:logs	G:logs	H:logs
Duration	0.002114*	0.002323*	0.002081*	0.001225*	0.1807**	0.1889**	0.1832**	0.1768**
	(0.0010)	(0.0010)	(0.0010)	(0.0006)	(0.0682)	(0.0692)	(0.0691)	(0.0641)
Medical cause of amp.	0.1132	0.1144	0.08961	0.08533	0.1192	0.1126	0.07488	0.07766
	(0.1131)	(0.1148)	(0.1064)	(0.1076)	(0.1180)	(0.1179)	(0.1072)	(0.1076)
Lower body amp.	-0.1309	-0.09237	0.06119	-0.09937	-0.2952+	-0.2975	-0.09348	-0.09447
	(0.2478)	(0.2799)	(0.2174)	(0.1242)	(0.1730)	(0.1918)	(0.1345)	(0.1338)
Two or more amp.	0.2472	0.3019	0.3506**	0.2856**	0.1082	0.1098	0.2863**	0.2843**
	(0.2374)	(0.1910)	(0.1123)	(0.0940)	(0.2339)	(0.2514)	(0.1015)	(0.1014)
Lower body amp. duration*	-0.001375	-0.001379	-0.0008759					
	(0.0009)	(0.0009)	(0.0010)					
Lower body amp. duration*	-0.0008934	-0.001188	-0.0007074					
	(0.0010)	(0.0010)	(0.0012)					
Married	-0.08043	-0.09842	-0.1061	-0.07338	-0.02966	-0.04343	-0.05785	-0.05747
	(0.1347)	(0.1316)	(0.1271)	(0.1177)	(0.1301)	(0.1270)	(0.1211)	(0.1213)
Higher_education	0.1523	0.1431	0.1102	0.1031	0.1718	0.1628	0.1326	0.1341
	(0.1322)	(0.1265)	(0.1254)	(0.1195)	(0.1222)	(0.1196)	(0.1175)	(0.1179)
Employed	0.1402	0.1326	0.1308	0.09884	0.1185	0.1118	0.1047	0.1106
	(0.1839)	(0.1767)	(0.1706)	(0.1691)	(0.1645)	(0.1621)	(0.1613)	(0.1589)
Female	-0.2667+	-0.2506+	-0.2358+	-0.1968	-0.2228	-0.2006	-0.2058+	-0.2055+
	(0.1531)	(0.1432)	(0.1343)	(0.1241)	(0.1403)	(0.1328)	(0.1233)	(0.1231)
Age	-0.02753	-0.01882	-0.02341	-0.02495	-0.02379	-0.02108	-0.02745	-0.02763
	(0.0324)	(0.0337)	(0.0321)	(0.0323)	(0.0350)	(0.0358)	(0.0340)	(0.0339)
Age2	0.0001641	0.00008177	0.0001332	0.0001579	0.0001066	0.00008779	0.0001601	0.0001631
	(0.0003)	(0.0004)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
No children	0.1178*	0.1148*	0.09542*	0.08894+	0.09393+	0.08958+	0.07888+	0.07936+
	(0.0537)	(0.0519)	(0.0480)	(0.0476)	(0.0521)	(0.0503)	(0.0478)	(0.0476)

Variable	A	B	C	D	E:logs	F:logs	G:logs	H:logs
Other_med_conditions	-0.04335	-0.04790	-0.07006	-0.09084	-0.07981	-0.08700	-0.09753	-0.09571
	(0.1272)	(0.1235)	(0.1173)	(0.1157)	(0.1200)	(0.1194)	(0.1149)	(0.1149)
Comorbidities_derived	-0.2628*	-0.2388*	-0.2182*	-0.2197*	-0.2281*	-0.2031+	-0 .1973+	-0.1970+
	(0.1096)	(0.1085)	(0.1028)	(0.1027)	(0.1087)	(0.1072)	(0.1039)	(0.1040)
Pain	-0.0007276	-0.001361	-0.002041	-0.002274	-0.001908	-0.002192	-0.002721	-0.003081
	(0.0021)	(0.0021)	(0.0032)	(0.0021)	(0.0021)	(0.0021)	(0.0029)	(0.0021)
Used to use prosthetics, no intention to use again	-0.2639	-0.2170			-0.3321	-0.3404		
	(0.3209)	(0.3360)			(0.3390)	(0.3554)		
Use to use prosthetics, might use again	-0.5705***	-0.6005***			-0.5325*	-0.5647**		
	(0.1727)	(0.1628)			(0.2201)	(0.2080)		
Health insurance provider	-0.1781				-0.1308			
	(0.1267)				(0.1197)			
Private payment	-0.1671				-0.2957			
	(0.3716)				(0.3495)			
*Employed * duration*	-0.001640*	-0.001731**	-0.001832**	-0.001626*	-0.001614**	-0.001658**	-0.001557**	-0.001572**
	(0.0006)	(0.0007)	(0.0007)	(0.0007)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
*Pain * duration*			-0.000002237				-0.000002450	
			(0.0000)				(0.0000)	
Observations	89	89	91	91	89	89	91	91
Pseudo R-squared	0.25	0.23	0.20	0.19	0.26	0.25	0.21	0.21
ll	-43.2287	-44.2680	-46.7391	-47.2453	-42.6472	-43.4307	-45.9496	-45.9732
chi2	33.3953	30.1931	22.0984	20.4799	30.0423	29.4171	25.9131	25.6295

Standard robust errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

3 Impact of the welfare reform post-recession on disabled individuals

3.1 Introduction

The welfare benefits reform started in 2013 aimed at replacing current benefits scheme by incorporating several single benefits into one amount. Also, the new reform imposed a limit on the amount claimed per household (*Universal Credit*). As part of the reform, the Disability Living Allowance (DLA) was replaced by the Personal Independence Payment (PIP). All individuals who were receiving DLA had to apply for PIP and not all candidates were eligible for the new scheme. This reform meant lower disposable income for some of those on benefits, and many were anxious about the reassessment process and eligibility. According to the vast literature on the strong relationship between income and wellbeing, a lower disposable income would lead to a lower wellbeing status. However, the statistics published by the Office of National Statistics (ONS) on the measures of wellbeing before and after 2013 indicate no change on the average wellbeing level.

In this context, we aim to test whether a change in benefits leads to individuals reporting lower wellbeing status when everything else remains the same. We focus on the disabled population, which depends crucially on the state allowance received. We employ the three-year pooled cross-section data from the Annual Population Survey – Personal Wellbeing, which offers an array of wellbeing measures (life satisfaction, happiness, worthiness, anxiety, and self-assessed health) and personal characteristics, to which we add regional indicators of wages and unemployment. We use an instrumental variable approach to correct the potential endogeneity of disability. We employ Two-stage Least Squares for the models with continuous wellbeing dependent variables and a partial proportional odds model for that of self-assessed health (SAH). We implement three estimations. We first analyse the welfare effects on disabled population only. We then analyse wellbeing measures in the whole population, in a *diff-in-diff* estimation, where our treatment group is the disabled population. Lastly, we analyse the change in wellbeing in disabled individuals on benefits, after the welfare reform, in a *diff-in-diff-in-diff* estimation.

Our results indicate that the introduction of the welfare reform in 2013 made disabled individuals and those disabled claiming benefits worse off in terms of *life satisfaction, happiness*, levels of *anxiety* and *self-assessed health*. Our diff-in-diff and diff-in-diff-in-diff estimations confirm that both disabled individuals and those claiming benefits living with a disability report lower levels of wellbeing after the reform. In both estimations, we also obtain increased levels of anxiety. Several robustness checks confirm our results.

This chapter is organised as follows: the next section provides a background on discussion on wellbeing and state benefits, and the UK welfare reform. In section III we describe the data, while in section IV we explain the empirical strategy implemented. Section V presents the estimated results, followed by robustness checks in Section VI and conclusions in section VII.

3.2 Background

3.2.1 Benefits and wellbeing

This chapter was compiled based on the literature identified in the first chapter and supplemented with a targeted review on the impact of state benefits on wellbeing; seminal papers were identified through published reviews. The review was conducted in PubMed, university online library and Google Scholar. The literature was supplemented by supervising professor Mireia Jofre-Bonet. The literature was complemented by a Google search on the welfare reform where government published reports and mass media articles were used to write the discussion on this topic. A targeted search was conducted in January 2019 using the university online library to identify any recent publications on the relationship between wellbeing and benefits, using 'wellbeing', 'life satisfaction', 'benefits' and 'state benefits' terms, but no relevant articles were identified published in the last five years. Additionally, a search was done to identify recent research published on the impact of the UK welfare reform on individuals.

Individual wellbeing, currently a vastly researched indicator, is considered to be more reflective of a nation's welfare than the typical macro indicators such as unemployment rate or Gross Domestic Product (GDP). The principle is emphasized by the extant literature, which indicates that the most important determinants of individual wellbeing are personal characteristics, followed by unemployment, inflation and growth. Existing research finds that marital status, employment, personal income, self-reported health and other personal characteristics explain 80% of the variation in wellbeing, while socioeconomic factors account for a range between 5 and 20% (Kahneman, 1999, Oswald, 1997, Clark, 1994 , Blanchflower, 2004 , Easterlin, 2006). Even in elderly population the most significant determinants of wellbeing are income, social relationships (friends) and qualitative contacts with adult children (Pinquart and Sorensen, 2000).

Although there is a lack of consensus on the size of personal income's impact on wellbeing, the literature finds it a relevant control to be included, as income is strongly linked to wellbeing, even at older age (Kahneman, 1999, Winkelmann, 1998, Pinquart and Sorensen, 2000). The happiness-income paradox, or the Easterlin paradox, implies that over the long-term, a higher income does not lead to higher levels of happiness. However, this paradox was mainly tested in developed countries. (Easterlin et al., 2010) confirmed in his revisit of the happiness-income paradox that the positive happiness-income relationship holds for developed and developing countries as well as for the emerging Eastern European entities transitioning from socialism to capitalism. Happiness is strongly determined by income in the short run and followed over longer periods of time, such as ten years or more, it is found that while average happiness level does not increase at the same pace as a country's income, the relationship is still positive and statistically significant (Easterlin et al., 2010). Overall, the consensus is that income is an essential variable to be included in the wellbeing equation, whether it has a smaller or larger effect on the indicator (Dolan, 2008). A more elaborated discussion on wellbeing and its determinant is provided in the first chapter, section 1.2.

There is little research done regarding the relationship between benefits and wellbeing, although social benefits and allowances are part of disposable income for many individuals. We would expect that changes in benefits that affect disposable income would in turn lead to lower or improved wellbeing of those affected, whether receiving unemployment allowance, child benefit, housing benefits or disability allowance. (Milligan, 2011) find that the child benefits' changes in Canada had significant positive impact on their mental health and other measures such as physical health, deprivation measures and spanning test scores. In this analysis, increased children benefits are directly linked to improved test scores and decreased aggression and maternal depression. This research builds on the proven relationship between income and children development (Haveman, 1995).

One of the affected groups by changes in benefits regulation is the disabled population, which relies heavily on state allowance whether individuals are home-bound or work-limiting disabled. An analysis on benefits' impact on this subgroup would be more intricate, as disabled individuals would report different wellbeing levels compared to matched controls. An empirical analysis on a panel data series on married couples aged over 60 years where almost 40% of the sample was disabled, indicates that disabled individuals are worse off than those non-disabled in terms of wellbeing (Freedman et al., 2012). However, an extensive literature finds that patients of chronic diseases and disabled individuals alike report higher than expected quality of life and adapt to their situations; in the majority of cases, reported health-related quality of life returns to the initial levels in time, and in few cases current levels approach closely the initial quality of life score (Ubel et al., 2005, Brickman et al., 1978, Sackett and Torrance, 1978, Boyd et al., 1990, De Wit et al., 2000, Buick, 2002, Barron, 2003, Riis, 2005, Damschroder et al., 2005). Research with particular focus on disabled individuals confirm the adaption they are experiencing, by recovering to previous or very close to initial quality of life reported, or in general, that individuals with serious and long-term disabilities report good or excellent quality of life (Oswald, 2008, Schulz and Decker, 1985, Albrecht and Devlieger, 1999).

The relevance of benefits for disabled population is analysed in the context of the latest welfare reform implemented in the UK, presented below.

3.2.2 Welfare Reform 2013 (UK)

The Welfare Reform Act enacted in 2012 brought many changes in the welfare system in the UK with the goal of reducing the welfare bill and align some of the benefits previously paid separately. The most important change was creating the new Universal Credit benefit scheme that replaces the following six existing benefits and tax credits with a single monthly payment:

- Income based Jobseeker's Allowance
- Income-related employment and support allowance
- Income support
- Housing benefit
- Working tax credit
- Child tax credit

Universal Credit was launched in April 2013 in four pilot regions: Ashton-under-Lyne, Oldham, Warrington, and Wigan (DWP, 2013). The plan was to complete the transfer between 2013 and 2017 (Org, 2014). The main change under the *Universal Credit* is the limit on housing benefit. Under the new scheme, individuals who live in social housing as tenants will receive a maximum payment according to maximum number of bedrooms they should occupy; for example, a single individual will receive housing benefits for one bedroom, children under 10 years, regardless of gender, and those under 16 years of the same gender are expected to share a bedroom (Butler, 2016).

The new reform limits the total amount of benefit that can be claimed by a household, called the *benefit cap*. The overall limit for single-person households is set at £15,410 per annum in Greater London and at £13,400 outside Greater London; the *benefit cap* for couple-households (including single parents or couple parents) is £23,000 per annum in Greater London and £20,000 outside Greater London. Most of the changes in the Welfare Reform Act target working-age individuals, and as such the *benefit cap* only applies to people aged between 16 to 64 years. There are a few other exemptions from the benefit cap, including those who receive disability allowance, working tax or pensions as war widow or widower (gov.uk, 2017a).

The new reform also introduces the *Personal Independence Payments (PIP)* which replaces the previous Disability Living Allowance (DLA). PIP will only apply to people aged between 16 and 64 years, and all those who were previously received DLA will have this allowance stopped and will have to apply for PIP within 28 days of receiving notification. The eligibility conditions for PIP are based on the care and mobility needs of the individuals that are assessed by a health professional. Not all of those who received DLA are eligible for PIP (DWP, 2016). Both PIP and DLA consists of two components – mobility and care (daily living under PIP); DLA included three rates for the care component while PIP includes only two rates. There is a maximum allowance under PIP of £141.10 per week, while there was no cap on DLA. All PIP applications will be reviewed at fixed term, except for terminally ill patients. PIP does not only apply to people living with a disability, but to individuals with mobility and/or care issues, which includes also individuals with mental health conditions. Moreover, applicants will be reassessed for the Motability scheme, under which claimants with disabilities are eligible for a vehicle or powered wheelchair (gov.uk, 2017b, gov.uk, 2017c, Motability, Advice).

Between April 2013 and October 2017, there were over three million PIP registrations made, out of which 1,177,000 were DLA receivers assessed for PIP. Of the 2,999,000 cleared applications, only 1,099,000 were previous DLA applicants who were cleared for PIP. This yields to a rate of 73% of DLA applicants who have been cleared for PIP. Of all people cleared for PIP, 1,607,000 were receiving payments at the end of October 2017. By the end of October 2017, 947,000 DLA reassessments were cleared, and 22% of applicants had their benefits reduced and 21 % applications were declined (DWP, 2017).

There has been some recent research done on the impact the welfare reform had on people, in the form of qualitative reviews of the experiences individuals affected by the reform had. The common conclusions of these analyses are that people experienced fear, insecurity, panic, worry, increased levels of stress and frustration, and even suicidal thoughts. Although some

people were able to successfully appeal the decision, amongst those who were deemed ineligible for PIP, the daunting process made an impact on health and wellbeing of affected individuals. People were now more motivated to find work due to uncertainty of receiving benefits and prefer to accept low-paid or insecure jobs. Most individuals had to deal with the stigmatisation around benefit claimants, although all report they are not happy they are in this position. The welfare reform has shifted the threshold for disabled individuals' entitlement to benefits and impacted equality and the perception people have on benefit claimants (Garthwaite, 2014, Patrick, 2014, Harris, 2014).

In the current chapter, we focus mainly on the disabled population entitled to PIP and how the changes in this allowance and application procedure might have affected the individuals. Thus, we control for the start of the new scheme (April 2013) and for the four regions where the scheme was first implemented, Ashton-under-Lyne, Oldham, Warrington, and Wigan.

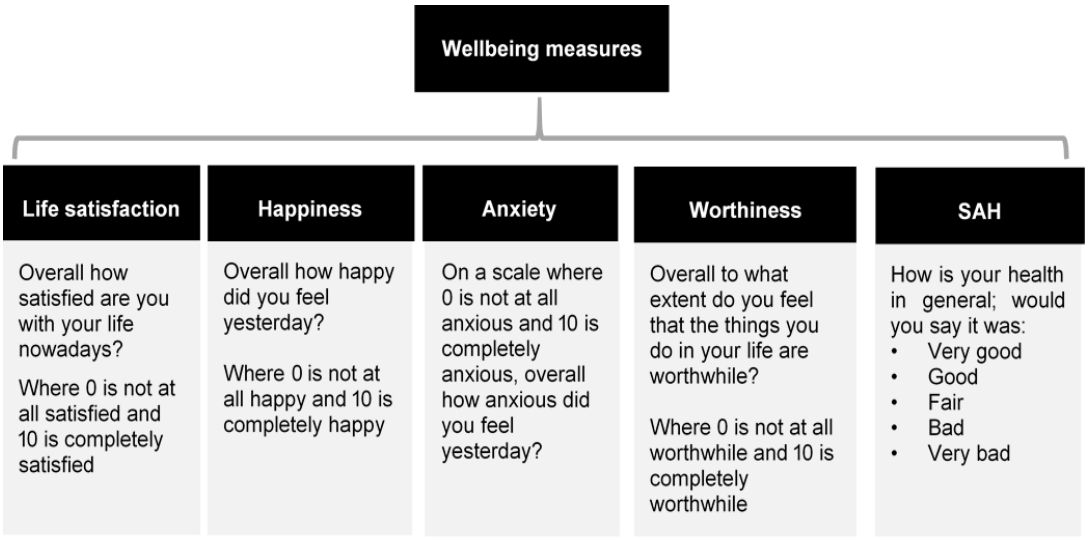
For the purpose of our study, we exploit the three-year pooled cross-section data from the Annual Population Survey (APS) – Personal Wellbeing, compiled by the Office of National Statistics. APS combines data from the quarterly Labour Force Survey and the APS 'boost' sample in England, Wales and Scotland. Interviews are conducted over 12 months on a rotational basis for several periods; however, the dataset is combined such that no single individual appears twice in a single year dataset. The three-year dataset is combined by the ONS to maintain it as a cross-section and avoid duplicates (ONS, 2017a). We chose the March 2011 – April 2014 dataset and apply the provided weights so that we have a representative sample of all individuals in the UK aged over 16.

3.3 Data

3.3.1 Wellbeing measures

The APS – Personal Wellbeing dataset includes an extensive number of individual characteristics and five wellbeing measures presented in **Figure 1**. Summary statistics for the five wellbeing measures are presented in **Table 1** below.

Figure 1. Wellbeing measures in APS – Personal Wellbeing



SAH: Self-assessed health. *Source:* adapted from ONS (2017b)

We treat 'Life satisfaction', 'Happiness', 'Anxiety' and 'Worthiness' as continuous ordinal variables[12], where respondents choose a score between 0 and 10, and 'Self-assessed health' (SAH) as categorical ordinal variable with five options available. The scales of scores for 'Life satisfaction', 'Happiness', 'Worthiness' and SAH, are upward, with 0 representing the lowest possible score and 10 the maximum one. 'Anxiety' scores are downward, as 0 represent the least anxious an individual feel, and 10 the most anxious. Summary statistics for the wellbeing indicators are presented in **Table 1** on a yearly basis, for disabled and non-disabled individuals.

[12] FERRER-I-CARBONELL, A., FRIJTERS, P. 2004. How important is methodology for the estimates of the determinants of happiness? *The Economic Journal,* 114, 641–659.) discussed and analysed the difference in estimating wellbeing measures as ordinal or cardinal and found little difference. Based on this evidence, we treat the four wellbeing variables with scores from 0 to 10 as continuous

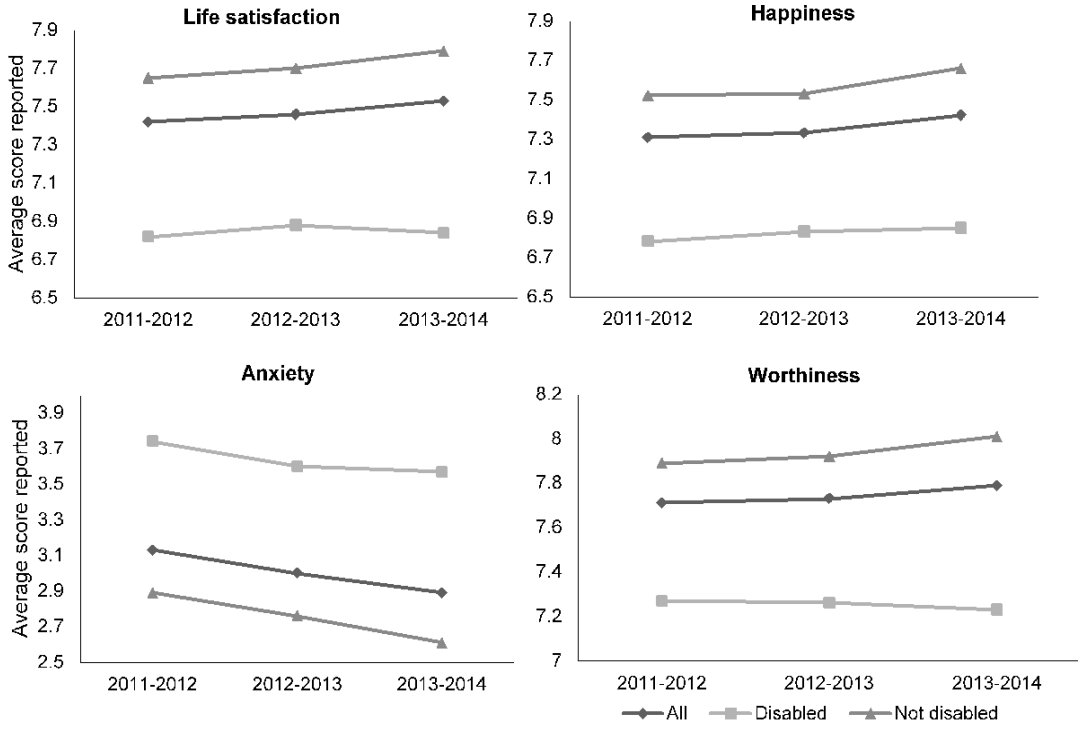
Table 1. Summary statistics of the wellbeing measures

Variable	Description	Disabled			Non-disabled			T-test*
		2011-2012	2012-2103	2013-2014	2011-2012	2012-2103	2013-2014	
Life satisfaction	0-10 scale	6.83 (2.27)	6.88 (2.24)	6.86 (2.26)	7.65 (1.71)	7.70 (1.66)	7.79 (1.62)	94.35*** (0.01)
Happiness	0-10 scale	6.79 (2.58)	6.83 (2.51)	6.85 (2.54)	7.53 (2.07)	7.54 (2.02)	7.66 (1.99)	71.88*** (0.01)
Anxiety	0-10 scale	3.75 (3.13)	3.60 (3.13)	3.57 (3.14)	2.89 (2.77)	2.76 (2.74)	2.61 (2.70)	-67.28*** (0,01)
Worthwhile	0-10 scale	7.27 (2.18)	7.26 (2.18)	7.24 (2.21)	7.89 (1.60)	7.93 (1.56)	8.01 (1.53)	76.7*** (0.01)
SAH	Very bad	5.43%	5.65%	6.06%	0.10%	0.06%	0.06%	-100*** (0.0005)
	Bad	18.85%	19.25%	20.51%	0.66%	0.49%	0.42%	-200*** (0.0019
	Fair	41.91%	42.27%	42.15%	10.15%	10.07%	9.25%	-210*** (0.0047)
	Good	27.44%	26.86%	26.06%	43.61%	44.63%	44.92%	82.89*** (0.0082)
	Very good	6.37%	5.96%	5%	45.48%	44.75%	45.36%	206.24*** (0.00093)
Number of observations		34,903	26,113	17,575	86,641	60,784	42,049	

*Standard errors in parenthesis. *** Statistically significant at 5%. SAH: Self-assessed health. *Source*: adapted from ONS (2014)

The evolution of the wellbeing indicators over the three-year period analysed is presented in **Figure 2** and **Figure 3**. When considering the whole sample, we notice that the changes are small over time; however, if we distinguish disabled from non-disabled individuals, we observe that, while for all individuals measures of wellbeing improve slightly, those living with disability always report poorer levels of wellbeing. '*Life satisfaction*', '*Happiness*', '*Worthiness*' and '*Self-assessed health*' scores are statistically higher for non-disabled individuals, and also those living with a disability have higher anxiety levels, as the results from t-test statistics show in the last column of **Table 1**.

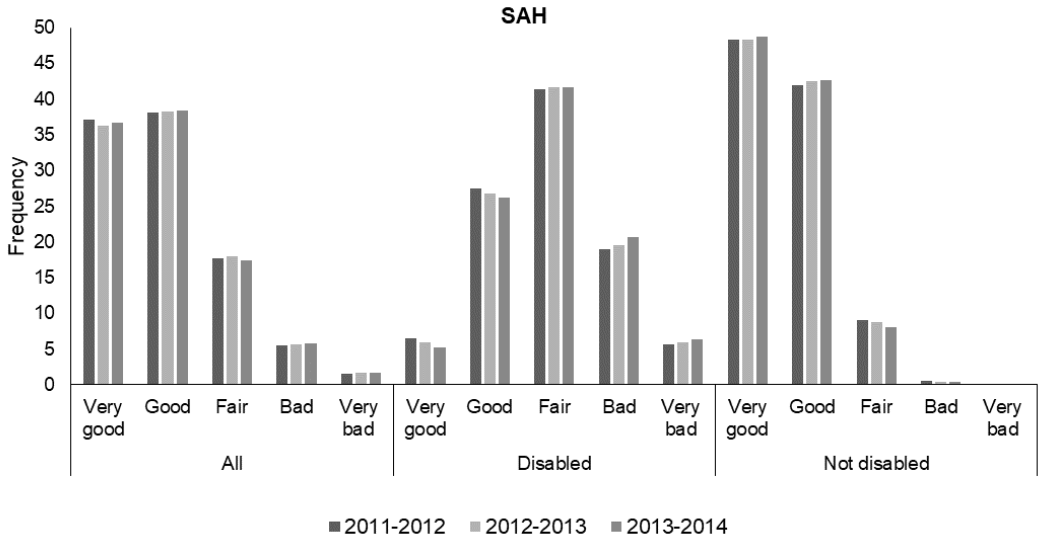
Figure 2. Average wellbeing indicators reported by disabled and non-disabled individuals



Source: adapted from ONS (2014)

Figure 2 also suggests that, for most measures, non-disabled and disabled individuals move in parallel trends, for both groups, from 2011-12 to 2013-14, one notices an upward trend for *life satisfaction*, *happiness* and *worthiness*, and a negative trend for *anxiety*.

Figure 3. SAH frequency reported by disabled and non-disabled individuals



SAH: Self-assessed health. Source: adapted from ONS (2014)

In concordance with **Figure 2**, **Figure** 3 shows that, over time, more disabled individuals report they are feeling '*Bad*' and '*Very bad*' and fewer report '*Good*' and '*Very good*', which is not the case for the not disabled sample.

3.3.2 Covariates

All our specifications control for being disabled, receiving benefits and also an array of personal characteristics including marital status, gender, age, education, ethnicity, country of origin, religion, accommodation details, employment and others, as summarized in **Table 2** on a yearly basis. We added regional economic variables (wage and unemployment rate) and a measure of deviation compared to UK level, to control for economic status.

Table 2. Summary statistics – covariates (Mean and standard deviation)

Variable	Description	2011-2012	2012-2013	2013-2014
Disability	No current disability	71.28%	69.95%	70.52%
	Current disability	28.72%	30.05%	29.48%
Benefits	Claiming state benefits	50.65%	49.62%	47.18%
	No state benefits	49.35%	50.38%	52.82%
Marital status	Married/Civil partnership	60.84%	60.54%	60.87%
	Single/Widow(er)/Divorced	39.16%	39.46%	39.13%
Occupation	Unemployed	12.06%	11.67%	11.27%
	Employed	45.58%	43.76%	44.08%
	Self employed	7.53%	7.56%	7.87%
	Government employed/training	0.14%	0.24%	0.24%
	Student	1.70%	1.66%	1.65%
	Retired	26.81%	29.30%	29.35%
	Disabled - not working	6.18%	5.80%	5.53%
Education - Highest qualification achieved	Degree	23.15%	23.69%	24.69%
	Higher education	10.55%	10.89%	10.90%
	A-level or equivalent	22.15%	22.09%	21.94%
	GCSE or equivalent	21.77%	20.96%	20.90%
	Other qualification	9.88%	9.49%	9.23%
	No qualification	12.51%	12.87%	12.35%
Age when left full time education	0 – still in education -1 – never had education	15.49 (4.35)	15.54 (4.42)	15.70 (4.40)
Gender	Male	43.68%	43.68%	43.94%
	Female	56.22%	56.32%	56.06%
Age	Age of respondent	51.48 (17.43)	52.55 (17.95)	52.75 (17.89)
Gross weekly wage	Pay in main job (£)	404.54 (229.87)	410.22 (231.00)	416.06 (230.70)
Smoking status	Current smoker	20.71%	20.17%	19.14%
	Ex-smoker	37.03%	37.02%	37.69%
	Never smoked	42.26%	42.80%	43.16%
Accommodation details	Owned outright	34.52%	36.01%	36.21%
	Bought with mortgage/loan	33.59%	31.40%	31.06%
	Part rent, part mortgage	0.38%	0.42%	0.44%
	Rented	30.54%	31.25%	31.33%
	Rent free or squatted	0.97%	0.92%	0.97%
Ethnicity	White	92.26%	92.32%	92.22%
	Gypsy, Traveller/Irish Traveller	0.03%	0.02%	0.02%
	Mixed/Multiple ethnic groups	0.62%	0.55%	0.60%
	Indian	1.73%	1.70%	1.77%
	Pakistani	0.93%	1.01%	0.99%
	Bangladeshi	0.35%	0.36%	0.37%
	Chinese	0.35%	0.39%	0.38%
	Any other Asian background	0.71%	0.67%	0.66%
	Black/African/Caribbean/Black British	2.03%	1.95%	1.91%
	Arab	0.21%	0.20%	0.21%
	Other ethnic group	0.79%	0.82%	0.87%
Religion	No religion	26.14%	27.24%	28.14%
	Christian	67.73%	66.37%	65.17%
	Buddhist	0.38%	0.39%	0.40%
	Hindu	1.03%	0.95%	1.04%

Variable	Description	2011-2012	2012-2013	2013-2014
	Jewish	0.38%	0.39%	0.41%
	Muslim	2.49%	2.53%	2.57%
	Sikh	0.44%	0.46%	0.40%
	Any other religion	1.42%	1.66%	1.87%
Length of time at the address	Less than 12 months	8.68%	8.74%	8.94%
	12 months < time < 2 years	7.28%	6.78%	6.85%
	2 years < time < 3 years	5.67%	5.79%	5.80%
	3 years < time < 5 years	9.87%	8.73%	8.50%
	5 years < time < 10 years	17.24%	17.58%	16.88%
	Longer than 10 years	51.26%	52.38%	53.02%
Regional wage	Regional weekly wage (£)	493 (48.90)	497.41 (47.04)	507.95 (42.56)
UK wage	UK weekly wage (£)	498.3 (NA)	506.1 (NA)	517.4 (NA)
Regional unemployment rate	Regional unemployment rate (%)	8.27 (1.40)	8.05 (1.17)	7.46 (1.24)
UK unemployment rate	UK unemployment rate (%)	8.2 (NA)	7.95 (NA)	7.4 (NA)
Interview type	Telephone	42.38%	31.76%	29.19%
	Face to face	57.62%	68.24%	70.81%
Number of observations		122,887	92,596	94,164

Notes: all summary statistics are rounded at two decimals. *NA*: not applicable. *Source*: adapted from ONS (2014)

From the examination of the summary statistics in **Table 2**, we observe that personal characteristics do not change considerably from one period to another. However, the population claiming benefits dropped from 50.65% in March 2011-April 2012 to 47.18% in March 2013-April 2014. There is a similar percentage of disabled population in our sample, varying between 28.72% in the first year to 29.48% in the last one. The definition of disability considered in the Annual Population Survey is based on the Disability Discrimination Act (1995) and work-limiting disabled. According to the Disability Discrimination Act, an individual is considered disabled if he/she has "a physical or mental impairment which has a substantial and long-term adverse effect on his ability to carry out normal day-to-day activities" (National Archives, 2005). Although, currently disability status is granted under the Equality Act 2010, the status that was considered at the time of the APS survey is the one of Disability Discrimination Act 1995. The available answers for the current disability questions are: 'DDA disabled', 'work-limiting disabled only', and 'not disabled'. We have a created a 'disabled' dummy that takes value 1 for individuals who responded with 'DDA disabled' or 'work-limiting disabled', and 0 for those who responded 'not disabled'.

For the purpose of our analysis, i.e. looking at the impact of the welfare reform on disabled individuals and those on benefits, it would have been relevant to include variables that control for the type of disability and benefits received. Due to the differences in defining 'disability' (as explained above) and potential respondent bias, we limit our analysis to a binary 'disable' variable. The APS survey does not distinguish between the types of benefits individuals are receiving; as such we cannot control for disability-related benefits.

Overall, the majority of our sample is comprised of married individuals, employed, female, aged between 51 and 52 years, and white. There are very few disabled participants who were not working at the time of the survey, their percentage varying between 5.50 and 6%. Most of the participants bought their home or own it through mortgage and earned between £400 and £416 weekly from March 2011 to April 2014. The average weekly income reported by disabled

individuals is higher that the PIP cap imposed through the welfare reform. We analyse the effects of the welfare reform on those with higher incomes in section 3.7 Alternative specification.

3.4 Empirical strategy

We conducted different estimations, which all included the indicator variable ***PIP*** that takes value 1 from 2013 onwards and 0 before. We first estimated a model that aims at assessing the impact the reform had on disabled individuals' wellbeing. Secondly, we analysed whether the reform affected differently disabled individuals compared to those non-disabled, and thirdly we looked at disabled individuals receiving benefits. In consequence, the second and third models use the whole sample. The second model use a *diff-in-diff* approach that exploits the interaction of *PIP* with being disabled. The third set exploits a diff-in-diff-in-diff in which we interact *PIP* with two dummy variables, being disabled and being on benefits. In the second and third models we instrument *disability* to remove the identification issues created by its potential endogeneity. Finally, we run several robustness checks detailed in section 3.6.

We included an extensive battery of controls including reported weekly wages (in logarithm), a quadratic form for age, age when left education, and years of education, to obtain marginal returns of education and age on wellbeing (Wooldridge, 2016). We also control for the standard deviation of regional average wages and unemployment rate compared to UK average, and the percentage growth of regional wages, to capture regional economic heterogeneity. Furthermore, we include fixed regional, yearly and seasonal effects and control for the four regions where the welfare scheme was first implemented. The regions included in the analyses are those defined by the Government Office Regions: North East, North West (including Merseyside), Yorkshire and The Humber, East Midlands, West Midlands, East of England, London, South East, South West, Wales, Scotland, and Northern Ireland.

3.4.1 Welfare Reform, Benefits, and Wellbeing – disabled population

The first model is estimated only for disabled individuals. We assume that individual i's living in region j at time t latent wellbeing, WB^*_{ijt}, can be represented by the following model:

$$WB^*_{ijt} = f\left(X_{it}, Z_{jt}, PIP, benefits_{ijt}, PIP * benefits_{ijt}\right),$$

where X_{it} is the matrix of personal characteristics, and Z_{jt} is the matrix of regional indicators. *PIP* is the indicator variable for the welfare policy reform that takes value 1 from 2013 onwards and 0 before, $benefits_{ijt}$ takes value 1 if individual i in region j in period t receives benefits and 0 otherwise, and $PIP * benefits_{ijt}$ is the interaction of these two indicator variables.

However, for each wellbeing measure we only observe its self-reported measure, WB_{ijt}. Assuming linearity and adding the fixed effects for year (μ_t), region (reg_{jt}), and season, ($season_s$), we estimate the effect of the reform on wellbeing using the following expression:

$$WB_{ijt} = \alpha + \tau PIP + \rho benefits_{ijt} + \sigma PIP * benefits + \delta X_{it} + \lambda Z_{jt} + reg_j + \mu_t + season_s + \epsilon_{ijt} \quad (1)$$

WB is either *life satisfaction*, *happiness*, *anxiety*, *worthiness,* or *self-assessed health* (*SAH*). The first four variables are on a scale 0-10 and SAH on a scale 1-5. Thus, we treat the first four indicators (*life*_satis, *happy*, *worth, anxious*) as continuous variables and estimate Equation (1) using *Ordinary Least Squares* (OLS). Instead, we treat *SAH* is treated as a categorical variable and so we estimate equation (1) using the *Proportional Odds model (PPO)*. We assume that the observed SAH chosen category by the individual relates to the latent *SAH (SAH)** as follows:

$$SAH_{i,j,t} = \begin{cases} = 1 & if\ SAH^*_{i,j,t} \leq k_1 \\ = 2 & if\ k_1 < SAH^*_{i,j,t} \leq k_2 \\ = 3 & if\ k_2 < SAH^*_{i,j,t} \leq k_3 \\ = 4 & if\ k_3 < SAH^*_{i,j,t} \leq k_4 \\ = 5 & if\ SAH^*_{i,j,t} > k_4 \end{cases}$$

where $k_{s,}$ for s=1, 2, 3, 4, are category cut-offs or thresholds to be estimated.

For ordered categorical variables, the usual assumption is that the *Proportional Odds/Parallel Lines assumption* (PO) holds, i.e. the coefficients are the same for all categories of the dichotomous variable. However, as this is very restrictive, one can use instead the *Generalised Ordered Logit model* (Gologit) (all coefficients are different across the categories of the dependent variable) or the *Partial Proportional Odds* model (only some of the coefficients vary).

We apply the Brant test Stata® to determine whether the assumption of the *PO* assumption is violated in our case. According to this test (associated tables are presented in the Supporting Information), some of the covariates meet the PO assumptions while some do not. Therefore, we estimate a *Partial Proportional Odds* model, implemented in Stata® with the gologit2 command (Williams, 2006). Thus, the estimated model for *SAH* is:

$$P\left(SAH_{i,j,t} > k\right) = \frac{\exp(\alpha_k + \beta_k X_{i,t} + \gamma_k Z_{j,t})}{1 + \exp(\alpha_k + \beta_k X_{i,t} + \gamma_k Z_{j,t})} \quad (2)$$

In our model, ethnicity, accommodation details, religion, length of time at the address, regional unemployment, regional wage, married, smoking status, age when left education (squared) and education (squared) are restricted, whereas the rest of the variables are not constrained.

We employ robust standard errors in all estimations.

3.4.2 Welfare Reform, Benefits, Disability and Wellbeing – full sample

To capture the effects of the welfare reform on the wellbeing of disabled individuals, we also estimate a model using the entire sample, both disabled and not, and exploit the differential effect of the reform on those with disabilities. We first test for the endogeneity of disability

(using a Durbin-Wu-Hausman test) and reject the null hypothesis at 5% level of significance.[13] Thus, we instrument disability. We use *limit_a* (whether health problem affect amount work individuals can perform), *limit_k* (whether health problem affect the kind of work individuals can perform) and *year of birth* (as the average age in the sample is 52 years, some individuals might have been involved in wars) as instruments which passed the relevance and validity tests.

The final IV two-stage least-squares model (2SLS) we estimate is:

$$WB_{i,j,t} = \alpha + \tau PIP + \beta disab_{IVi,j,t} + \gamma PIP * disab_{IVi,j,t} + \rho benefits_{ijt} +$$

$$+\delta X_{i,t} + \lambda Z_{j,t} + \varphi first_{regions} + region_{dummies} + year_{dummies} + season_{dummies} + \epsilon_{i,j,t} \quad (3)$$

where $disab_{IV}$ is the instrumented disability variable, PIP is the dummy variable indicating when the welfare reform started (April 2013), *benefits* whether the individual is on receipt of benefits, and $first_{regions}$ is the dummy variables indicating the first four regions where the reform was implemented. We implement the *PPO* estimation for SAH using robust standard errors.

3.4.3 Wellbeing of disabled individuals claiming benefits

To complement our analysis, we estimate an alternative IV 2sls model to look at the effect of welfare reform on the wellbeing of disabled individuals claiming social benefits, before and after the implementation of the reform, in the following model:

$$WB_{i,j,t} = \alpha + \tau_0 PIP + \tau_1 disab_{IV,i,j,t} + \tau_2 benefits + \tau_3 disab_{IV,i,j,t} * benefits_{i,t} + \tau_4 PIP * disab_{IV,i,j,t} + \tau_5 PIP * benefits_{i,t} + \tau_6 PIP * disab_{IV,i,j,t} * benefits_{i,t} + \delta X_{i,t} + \lambda Z_{j,t} + \varphi first_{regions} + region_{dummies} + year_{dummies} + season_{dummies} + \epsilon_{i,j,t} \quad (4)$$

The coefficient of interest is that corresponding to the interaction term $\boldsymbol{PIP * disab_{IV,i,j,t} * benefits_{i,t}}$ that captures the effect of the welfare reform on disabled individuals claiming benefits after the reform started, compared to those not disabled not on benefits.

We include the same covariates as in previous specifications and estimate with robust standard errors. Variable *disability* is instrumented as in the previous model. All estimations are robust to several specifications. We perform different robustness checks which are presented in section 3.6.

3.5 Results

Explanation on model specifications

All results are presented in two tables; one includes estimations for *life satisfaction*, *happiness*, *anxiety* and *worthiness* as these variables are estimated with OLS, and one presents results for *sah* (estimated with PPO). For all estimations, three specifications are presented; the

[13] Robust score chi2(1) = 331.96, p = 0.00; Robust regression F (1,74142) = 237.93, p = 0.000

difference between the first two specifications is that in one we control for % growth in regional wage and regional unemployment (log), while in the second we control for standard deviations of the regional wage and unemployment compared to national average. The third specification includes different interacted variables, such as female and disability, to establish whether specific groups are affected differently by the welfare reform. Literature has shown a significant difference in wellbeing between men and women and we tested if the welfare reform impacts disabled women compared to men differently (DiTella et al., 2003; Oswald, 1997; Clark & Oswald, 1994). The interaction variable is included in estimations including the entire sample. However, for consistency, the estimated coefficients for *female* are presented in the first model, ran only on disabled individuals.

The results of a PPO model are different and can be interpreted as a series of binary logistic regressions where each panel, *k*, is the reference group, and *k+1* categories are 'recoded' as 1. We interpret the results by contrasting the coefficients of each panel with the upper categories. Positive estimations mean that the higher the values of the explanatory variables, the higher the probability the respondent will report a higher response than a lower one or is less likely to report a lower score. A negative coefficient means that the higher the values of the explanatory variables the more likely the respondent will report a lower category (Williams, 2006). Accordingly, for *sah* estimations we have four panels with three specifications each.

3.5.1 Welfare Reform, Benefits, and Wellbeing – disabled population

The first model estimated includes only the disabled population and is estimated with OLS for *life satisfaction*, *happiness*, *anxiety* and *worthiness,* and with PPO for *self-assessed health*. The results of the first model are presented in **Table 3** and **Table 4**.

From **Table 3,** we observe that amongst the disabled population, individuals receiving benefits are worse off in terms of life satisfaction and happiness. Moreover, we obtain that those receiving benefits have increased levels of anxiety compared to disabled individuals who are not receiving benefits. However, no conclusions can be made for the impact the benefits have on *worthiness*, as the coefficients are not statistically significant in any of the three estimations.

The coefficients of the interaction term of *PIP*benefits* are negative and statistically significant for *life satisfaction*. Thus, individuals with disability receiving benefits reported lower levels of *life satisfaction* after the welfare reform. The scores reported dropped on average by 0.10-0.11 and are significant at 5% level. Note that the rate of regional unemployment shows a negative effect on *life satisfaction* and *worthiness,* while the variation (standard deviation) of regional wages and unemployment has a statistically significant negative effect on *worthiness*.

The results estimated for *self-assessed health* are presented in **Table 4.** For individuals on benefits we obtained negative coefficients in all estimations, which indicate that they are more reluctant to report higher SAH scores than those who do not receive benefits. Furthermore, the coefficients are increasing for higher scores, showing less reluctance for individuals to report higher scores of *SAH*. however, no significant difference is obtained when comparing the

impact on wellbeing after the welfare reform was implemented (the coefficients of the interaction term of *PIP*benefits* are not statistically significant in any estimation).

We observe that most of the personal characteristics we control for are statistically significant at 1% (complete results are presented in Appendix 3.11.2). This is to be expected, as most research finds that the strongest determinants of wellbeing are personal characteristics (Kahneman, 1999, Oswald, 1997, Clark, 1994 , Blanchflower, 2004 , Easterlin, 2006). Thus, married individuals, women and those who quit smoking or never smoked are better off on all wellbeing indicators, all statistically significant at 1%. We also obtain that age has a u-shaped effect on wellbeing, with lower levels at younger age and an increasing positive effect as individuals grow older. Working status is an important determinant as well, with retired individuals reporting the highest scores in wellbeing, followed by employed and self-employed, compared to unemployed individuals. In all these examples, the coefficients for *anxiety* are negative, indicating that such individuals are less anxious than control group; for example, women are less anxious than men, and those who have quit smoking and those who never smoked are less anxious than current smokers. Disabled individuals who are not working are worse off than unemployed individuals, reporting on average low levels of *life satisfaction* (rounded to two decimals, 0.61), *happiness* (0.66) and *worthiness* (0.87), and higher levels of *anxiety* (0.73). While personal characteristics represent an important determinant of wellbeing, the current analysis focuses on welfare reform on disabled individuals and only relevant controls (*disability*, *benefits*, *first regions* the programme was launched in, regional macro indicators) are included in Results section.

Table 3. Life satisfaction, happiness, anxiety and worthiness measures of WB in disabled population (OLS)

Variable	Life satis (1)	Life satis (2)	Life satis (3)	Happy (1)	Happy (2)	Happy (3)	Anxiety (1)	Anxiety (2)	Anxiety (3)	Worth (1)	Worth (2)	Worth (3)
PIP	-0.0280	0.0372	0.0369	-0.0067	0.0145	0.0144	-0.0582	-0.0643	-0.0637	-0.0325	0.0023	0.0025
	(0.0510)	(0.0410)	(0.0410)	(0.0621)	(0.0507)	(0.0507)	(0.0801)	(0.0660)	(0.0660)	(0.0521)	(0.0423)	(0.0423)
Benefits	-0.1658***	-0.1668***	-0.1602***	-0.0895**	-0.0906**	-0.0896**	0.0772+	0.0782+	0.0637	0.0144	0.0139	0.0085
	(0.0280)	(0.0280)	(0.0291)	(0.0334)	(0.0334)	(0.0348)	(0.0425)	(0.0424)	(0.0440)	(0.0268)	(0.0268)	(0.0279)
*PIP*benefits*	-0.1068*	-0.1038*	-0.1033*	-0.0204	-0.0156	-0.0155	0.0236	0.0186	0.0175	-0.0457	-0.0436	-0.0441
	(0.0511)	(0.0510)	(0.0510)	(0.0619)	(0.0619)	(0.0619)	(0.0791)	(0.0791)	(0.0791)	(0.0520)	(0.0520)	(0.0520)
Female	0.1504***	0.1509***	0.1509***	0.0484+	0.0484+	0.0484+	0.2633***	0.2635***	0.2635***	0.3306***	0.3307***	0.3307***
	(0.0230)	(0.0230)	(0.0230)	(0.0267)	(0.0267)	(0.0267)	(0.0333)	(0.0333)	(0.0333)	(0.0227)	(0.0227)	(0.0227)
% growth regional wage	0.0096			0.0117			-0.0125			-0.0002		
	(0.0088)			(0.0104)			(0.0131)			(0.0088)		
Log regional unemp	-0.7685*			-0.2568			0.0200			-0.6235+		
	(0.3342)			(0.3965)			(0.4935)			(0.3274)		
Regional wage (st dev)		-0.0084	-0.0084		-0.0072	-0.0072		0.0044	0.0044		-0.0094+	-0.0094+
		(0.0053)	(0.0053)		(0.0062)	(0.0062)		(0.0079)	(0.0079)		(0.0054)	(0.0054)
Regional unemp (st dev)		0.0373	0.0371		-0.0379	-0.0379		0.0812	0.0815		-0.0065	-0.0064
		(0.0692)	(0.0692)		(0.0820)	(0.0820)		(0.1018)	(0.1018)		(0.0689)	(0.0689)
First regions			-0.0197			-0.0838			0.0482			-0.1022
			(0.1035)			(0.1259)			(0.1569)			(0.1036)
*First regions *benefits*			-0.0583			-0.0089			0.1286			0.0485
			(0.0624)			(0.0777)			(0.0968)			(0.0637)
Observations	55705	55705	55705	55690	55690	55690	55624	55624	55624	55493	55493	55493
R-squared	0.16	0.16	0.16	0.094	0.093	0.093	0.050	0.050	0.050	0.13	0.13	0.13
ll	-1.20e+05	-1.20e+05	-1.20e+05	-1.29e+05	-1.29e+05	-1.29e+05	-1.41e+05	-1.41e+05	-1.41e+05	-1.18e+05	-1.18e+05	-1.18e+05

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variable: year – 2011-2012. OLS: ordinary least squares; satis: satisfaction; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10, * p<0.05 **, p<0.01 ***, p<0.001.

Table 4. Self-assessed health in disabled population (PPO)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
PIP	-0.0706	-0.1218	-0.1206	-0.1318+	-0.1829**	-0.1835**	-0.0161	-0.0668	-0.0671	-0.0637	-0.1145	-0.1145
	(0.1776)	(0.1752)	(0.1749)	(0.0744)	(0.0693)	(0.0692)	(0.0545)	(0.0467)	(0.0467)	(0.0839)	(0.0787)	(0.0787)
Benefits	-0.5183***	-0.5173***	-0.5212***	-0.5019***	-0.5008***	-0.4908***	-0.2332***	-0.2325***	-0.2194***	-0.0575	-0.0569	-0.0424
	(0.1014)	(0.1014)	(0.1065)	(0.0437)	(0.0437)	(0.0455)	(0.0302)	(0.0302)	(0.0315)	(0.0518)	(0.0518)	(0.0539)
*PIP*benefits*	0.0182	0.0155	0.0143	0.0882	0.0854	0.0862	0.0046	0.0021	0.0028	0.0356	0.0332	0.0339
	(0.1837)	(0.1836)	(0.1833)	(0.0766)	(0.0766)	(0.0765)	(0.0579)	(0.0579)	(0.0579)	(0.1063)	(0.1064)	(0.1064)
Female	0.0635	0.0634	0.0634	0.0846**	0.0844**	0.0843**	0.0212	0.0209	0.0208	-0.0841+	-0.0842+	-0.0845+
	(0.0465)	(0.0465)	(0.0465)	(0.0280)	(0.0280)	(0.0280)	(0.0250)	(0.0250)	(0.0250)	(0.0454)	(0.0454)	(0.0454)
% growth regional wage	-0.0127			-0.0127			-0.0127			-0.0127		
	(0.0079)			(0.0079)			(0.0079)			(0.0079)		
Log regional unemp	0.3527			0.3527			0.3527			0.3527		
	(0.3058)			(0.3058)			(0.3058)			(0.3058)		
Regional wage (st dev)		0.0560	0.0559		0.0560	0.0559		0.0560	0.0559		0.0560	0.0559
		(0.0631)	(0.0630)		(0.0631)	(0.0630)		(0.0631)	(0.0630)		(0.0631)	(0.0630)
Regional unemp (st dev)			0.2489			0.2049			0.3072**			0.2049
			(0.2227)			(0.1250)			(0.1033)			(0.1498)
First regions			0.2489			0.2049			0.3072**			0.2049
			(0.2227)			(0.1250)			(0.1033)			(0.1498)
*First regions*Benefits*			0.0427			-0.0888			-0.1164			-0.1297
			(0.2053)			(0.0978)			(0.0713)			(0.1338)
Observations	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108
ll	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04
Chi2	21539	21544	21882	21539	21544	21882	21539	21544	21882	21539	21544	21882

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variables: year – 2011-2012. PPO: Proportional Odds; SAH: self-assessed health; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10,* p<0.05, ** p<0.01, *** p<0.001.

3.5.2 Wellbeing of disabled individuals – all sample (IV estimation)

The main estimation of our research is the model where we included all sample. This offers the opportunity to control for the impact of the welfare on those disabled, by comparing their situation with those not disabled. The results of this model are reported in **Table 5** and **Table 6**. In this estimation disability is instrumented, as explained in section 3.4.

From **Table 5** we observe that those living with a disability are worse off in terms of all measures of wellbeing included in our estimations, compared to control group, with average levels of *life satisfaction* of 0.73, *happiness* ranging between 0.63 and 0.58, and *worthiness* of 0.48-0.52 lower than individuals without a disability . Individuals are also feeling more anxious, by 0,70-.75 more than non-disabled responders. Also, the coefficients of the interaction term *PIP*Disab* are significant for *life satisfaction*; disabled individuals are reporting to be less satisfied after the reform started, compared to control group, results statistically significant at 5%.

Results in **Table 6** are similar. Disabled individuals are more likely to report lower levels of health compared to those living without a disability. Again, the coefficients are lower for higher scores, indicating disabled individuals' reluctance to report higher *SAH* scores. And so do individuals receiving state benefits, who also report lower levels of *SAH*. However, the coefficients of the interaction term *PIP*Disab* are not statistically significant in any estimation, and, according to these results, we cannot conclude that the *PIP* welfare reform impacted differently those disabled or those receiving benefits compared to their counterparts, on their self-assessed health.

We also note that growth in regional average wage is leading to an increase in reported *life satisfaction*, and less *anxiety*. The other regional characteristics included are not statistically significant in any estimation, showing that individuals are not as much influenced by the local wage rate or unemployment compared to their own personal characteristics (results shown in Appendix 3.11.3.The results show that women are better off in terms of *life satisfaction*, *happiness* and *worthiness*, but more anxious at the same time, compared to men. Also, while women in general are more likely to report higher scores of *SAH*, disabled women are less likely to report a high score.

Table 5. Life satisfaction, happiness, worthiness, and anxiety – all sample (2sls)

Variable	Life satis (1)	Life satis (2)	Life satis (3)	Happy (1)	Happy (2)	Happy (3)	Anxiety (1)	Anxiety (2)	Anxiety (3)	Worth (1)	Worth (2)	Worth (3)
PIP	0.0825+	0.1185**	0.0825+	0.1067+	0.1215*	0.1063+	-0.1233+	-0.1703**	-0.1227+	0.0577	0.0806*	0.0580
	(0.0437)	(0.0375)	(0.0437)	(0.0546)	(0.0473)	(0.0546)	(0.0707)	(0.0619)	(0.0707)	(0.0432)	(0.0365)	(0.0432)
Disab (IV)	-0.7277***	-0.7282***	-0.7317***	-0.6301***	-0.6307***	-0.5831***	0.7510***	0.7518***	0.6909***	-0.4847***	-0.4850***	-0.5189***
	(0.0327)	(0.0327)	(0.0439)	(0.0394)	(0.0394)	(0.0521)	(0.0500)	(0.0500)	(0.0663)	(0.0320)	(0.0320)	(0.0435)
*PIP*Disab (IV)*	-0.1249*	-0.1213*	-0.1249*	-0.0827	-0.0786	-0.0825	0.0602	0.0538	0.0599	-0.0742	-0.0723	-0.0743
	(0.0545)	(0.0545)	(0.0545)	(0.0656)	(0.0657)	(0.0656)	(0.0832)	(0.0832)	(0.0832)	(0.0536)	(0.0536)	(0.0536)
Benefits	-0.1441***	-0.1444***	-0.1438***	-0.0410+	-0.0411+	-0.0443+	0.0951**	0.0954**	0.0993***	0.0342+	0.0340+	0.0366*
	(0.0191)	(0.0191)	(0.0191)	(0.0231)	(0.0231)	(0.0232)	(0.0298)	(0.0298)	(0.0299)	(0.0184)	(0.0184)	(0.0185)
Female	0.1555***	0.1556***	0.1506***	0.0567**	0.0565**	0.1144**	0.2444***	0.2445***	0.1704**	0.3273***	0.3274***	0.2853***
	(0.0179)	(0.0179)	(0.0338)	(0.0213)	(0.0213)	(0.0423)	(0.0270)	(0.0270)	(0.0554)	(0.0177)	(0.0177)	(0.0331)
Female Disab (IV)*			0.0074			-0.0871			0.1117			0.0634
			(0.0498)			(0.0596)			(0.0756)			(0.0491)
First regions	-0.1111+	-0.0521	-0.1111+	-0.0043	-0.0897	-0.0050	0.0177	0.0893	0.0186	-0.0544	0.0083	-0.0540
	(0.0661)	(0.0747)	(0.0661)	(0.0797)	(0.0906)	(0.0797)	(0.0997)	(0.1132)	(0.0997)	(0.0652)	(0.0737)	(0.0652)
% growth regional wage	0.0120+		0.0120+	0.0123		0.0123	-0.0234*		-0.0234*	0.0074		0.0074
	(0.0068)		(0.0068)	(0.0082)		(0.0082)	(0.0104)		(0.0104)	(0.0067)		(0.0067)
Log regional unem	-0.3632		-0.3630	-0.0428		-0.0458	0.2690		0.2727	-0.2523		-0.2502
	(0.2573)		(0.2573)	(0.3120)		(0.3120)	(0.3920)		(0.3920)	(0.2531)		(0.2531)
Regional wage (st_dev)		-0.0058			-0.0015			0.0031			-0.0046	
		(0.0039)			(0.0046)			(0.0059)			(0.0038)	
Regional unemp (st dev)		0.0437			-0.0467			0.0459			0.0499	
		(0.0526)			(0.0639)			(0.0804)			(0.0523)	
Observations	81657	81657	81657	81637	81637	81637	81561	81561	81561	81421	81421	81421
R-squared	0.18	0.18	0.18	0.096	0.096	0.096	0.055	0.055	0.055	0.14	0.14	0.14
ll	-1.70e+05	-1.70e+05	-1.70e+05	-1.85e+05	-1.85e+05	-1.85e+05	-2.04e+05	-2.04e+05	-2.04e+05	-1.67e+05	-1.67e+05	-1.67e+05

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variables: year – 2011 -2012. Disab: disability; PIP: personal independence payment; Satis: satisfaction; unemp: unemployment; 2sls: Two-Stage Least-Squares. Robust standard errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

Table 6. Self-assessed health – all sample (PPO)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
PIP	-0.1000	-0.1305	-0.1162	-0.1676	-0.2055	-0.1671	0.1052+	0.0650	0.1045+	0.0904	0.0501	0.0888
	(0.3352)	(0.3347)	(0.3330)	(0.1341)	(0.1323)	(0.1345)	(0.0548)	(0.0500)	(0.0547)	(0.0677)	(0.0637)	(0.0678)
Disab (IV)	-3.2010***	-3.1944***	-2.9916***	-3.0845***	-3.0829***	-2.9822***	-2.1040***	-2.1039***	-1.9692***	-1.7096***	-1.7096***	-1.5480***
	(0.2318)	(0.2310)	(0.2935)	(0.0822)	(0.0822)	(0.1185)	(0.0375)	(0.0375)	(0.0517)	(0.0636)	(0.0636)	(0.0867)
*PIP*Disab (IV)*	0.0292	0.0167	0.0452	0.0847	0.0799	0.0843	-0.0847	-0.0865	-0.0848	-0.0285	-0.0300	-0.0258
	(0.3332)	(0.3332)	(0.3310)	(0.1357)	(0.1359)	(0.1361)	(0.0666)	(0.0666)	(0.0666)	(0.1139)	(0.1140)	(0.1143)
Benefits	-0.4728***	-0.4728***	-0.4822***	-0.3944***	-0.3941***	-0.4003***	-0.1611***	-0.1610***	-0.1676***	-0.0068	-0.0068	-0.0117
	(0.0863)	(0.0863)	(0.0867)	(0.0369)	(0.0369)	(0.0371)	(0.0226)	(0.0226)	(0.0227)	(0.0308)	(0.0308)	(0.0307)
Female	0.1460**	0.1458**	0.5406	0.1174***	0.1173***	0.2752*	0.0520*	0.0519*	0.2122***	-0.0339	-0.0337	0.1240*
	(0.0465)	(0.0465)	(0.3316)	(0.0281)	(0.0281)	(0.1261)	(0.0214)	(0.0214)	(0.0448)	(0.0300)	(0.0300)	(0.0577)
Female Disab (IV)*			-0.4126			-0.1886			-0.2516***			-0.3169**
			(0.3303)			(0.1302)			(0.0605)			(0.1039)
First regions	0.2199*	0.2191+	0.2200*	0.0710	0.0708	0.0704	0.2050**	0.2054**	0.2042**	0.1275	0.1285	0.1259
	(0.1074)	(0.1131)	(0.1074)	(0.0772)	(0.0850)	(0.0773)	(0.0687)	(0.0772)	(0.0687)	(0.0854)	(0.0923)	(0.0854)
% growth regional wage	-0.0081		-0.0081	-0.0081		-0.0081	-0.0081		-0.0081	-0.0081		-0.0081
	(0.0067)		(0.0067)	(0.0067)		(0.0067)	(0.0067)		(0.0067)	(0.0067)		(0.0067)
Log regional unem	0.2631		0.2604	0.2631		0.2604	0.2631		0.2604	0.2631		0.2604
	(0.2544)		(0.2543)	(0.2544)		(0.2543)	(0.2544)		(0.2543)	(0.2544)		(0.2543)
Regional wage (st_dev)		-0.0023			-0.0023			-0.0023			-0.0023	
		(0.0038)			(0.0038)			(0.0038)			(0.0038)	
Regional unemp (st dev)		0.0456			0.0456			0.0456			0.0456	
		(0.0522)			(0.0522)			(0.0522)			(0.0522)	
Observations	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108
ll	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04
chi2	21539	21544	21882	21539	21544	21882	21539	21544	21882	21539	21544	21882

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variables: year – 2011-2012. Disab: disability; PIP: personal independence payment; PPO: Proportional Odds; SAH: self-assessed health; st dev: standard deviation; unemp: unemployment. Robust standard errors in parentheses + p<0.10* p<0.05 ** p<0.01 *** p<0.001

3.5.3 Wellbeing of disabled individuals claiming benefits

We are also interested in disabled individuals receiving state benefits. The state benefits we control for include benefits awarded for those living with a disability, but also any other benefits individuals received, as the dataset available does not distinguish between different benefits. The results of this model are presented in **Table 7** and **Table 8**. As we control for individuals with disabilities, we estimated this model with *2sls* since the dummy variable *Disab* is instrumented as presented in section 3.4. Empirical strategy. *SAH* is estimated with PPO.

In all estimations, we observe that disabled individuals claiming benefits are worse off in terms of wellbeing (with one exception for *worthiness* in last estimation). On average, disabled individuals report lower levels of *life satisfaction*, by 0.29-0.40, *happiness* by 0.30-0.44, and *worthiness*, by 0.19, compared to control group. Disabled individuals claiming benefits are also more *anxious*, reporting higher levels, on average by 0.56-0.62. Almost all coefficients are statistically significant at 1%. The results obtained for *SAH* also show that disabled individuals are less inclined to report higher scores, with negative and increasing coefficients, from 1.91 to 5.34. All results for those disabled claiming benefits are significant at 1%.

The main variable of interest is the *diff-in-diff-in-diff*, *PIP*disab(IV)*benefit*, which identifies disabled individuals claiming benefits after PIP was implemented. The coefficients are negative and statistically significant in all estimations for *life satisfaction, happiness, anxiety* and *worthiness*. On average, this group reports lower *life satisfaction* values, by 0.56, *happiness*, by 0.64, and *worthiness*, by 0.51. Disabled individuals claiming state benefits reported higher levels of *anxiety* by 1.05, significant at 1%. The coefficients of the *diff-in-diff-in-diff* estimator are significant in three panels for *SAH,* corresponding to the comparison between reporting a score higher than 3, higher than 4 and reporting a score of 5 (the highest score, 'very good'), compared to the lower scores; individuals are still reluctant to report higher *SAH* scores, compared with control group, by 0.70-0.71, 0.78, and by 0.42, respectively.

We obtain similar results for women to the previous estimation. While in general women are better off in terms of *life satisfaction*, *happiness* and *worthiness*, and more *anxious*, disabled women claiming benefits are worse off in terms of wellbeing. However, women who claim benefits are better off in terms of wellbeing.

An increase in regional wage leads to less anxiety, and better scores reported for *life satisfaction*. However, an increase in the deviation of local unemployment compared to UK average decreases the likelihood to report higher scores of *life satisfaction*. The other regional characteristics controlled for are not statistically significant.

According to our estimations, disabled responders and disabled individuals on benefits, are worse off in terms of wellbeing after the reform started. The coefficients of the *diff-in-diff* estimator *PIP*Disab* are negative for *life satisfaction* indicating that disabled responders are less satisfied after the welfare reform started. Also, the coefficients of the *diff-in-diff-in-diff* estimator *PIP*Disab*Benefit* are negative and statistically significant for *life satisfaction, happiness, anxiety, worthiness* and *SAH*. Overall, all estimations show that those affected by the welfare reform, living with a disability and receiving state benefits, are worse off in terms of wellbeing, while the general population is reporting better scores over time. More to the point, both the disabled population and those disabled living on benefits are feeling more anxious since the start of the welfare reform and the results presented in this section would indicate that while individuals are not affected by regional performance in terms of wage or unemployment, they are now affected by a policy that affects their welfare.

Table 7. Life satisfaction, happiness, anxiety and worthiness measures of WB in disabled population (2SLS)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
PIP	-0.0749	-0.0198	-0.0743	-0.0738	-0.0447	-0.0737	0.1525	0.898	0.1532	-0.0863	-0.0511	-0.0854
	(0.0632)	(0.3993)	(0.0631)	(0.0813)	(0.0764)	(0.0813)	(0.1062)	(0.0999)	(0.1062)	(0.0648)	(0.0599)	(0.0648)
*Disab*Benefit (IV)*	-0.3997***	-0.3993***	-0.2946**	-0.4351***	-0.4356***	-0.3045*	0.6204***	0.6213***	0.5607***	-0.1936**	-0.1936**	-0.0992
	(0.0664)	(0.0664)	(0.0950)	(0.0833)	(0.0833)	(0.1190)	(0.1087)	(0.1087)	(0.1528)	(0.0634)	(0.0634)	(0.0935)
*PIP*Disab*Benefits (IV)*	-0.5645***	-0.5641***	-0.5616***	-0.6416***	-0.6397***	-0.6382***	1.0502***	1.0475***	1.0484***	-0.5092***	-0.5069***	-0.5063***
	(0.1371)	(0.1372)	(0.1371)	(0.1773)	(0.1773)	(0.1773)	(0.2295)	(0.2295)	(0.2295)	(0.1402)	(0.1402)	(0.1402)
Disab(IV)	-0.5849***	-0.5850***	-0.6330***	-0.4628***	-0.4624***	-0.4961***	0.5044***	0.5040***	0.4792***	-0.4244***	-0.4242***	-0.4703***
	(0.0452)	(0.0452)	(0.0673)	(0.0558)	(0.0558)	(0.0827)	(0.0718)	(0.0717)	(0.1057)	(0.0435)	(0.0436)	(0.0666)
*PIP*Disab(IV)*	0.2101*	0.2121*	0.2096*	0.2621*	0.2631*	0.2611*	-0.5004**	-0.5044**	-0.5010**	0.2077*	0.2078*	0.2080*
	(0.0954)	(0.0956)	(0.0954)	(0.1212)	(0.1213)	(0.1212)	(0.1581)	(0.1582)	(0.1581)	(0.0958)	(0.0959)	(0.0958)
Benefits	0.1260**	0.1248**	0.0187	0.2277***	0.2274***	0.1366	-0.3057***	-0.3049***	-0.2329*	0.1670***	0.1665***	0.0195
	(0.0473)	(0.0473)	(0.0693)	(0.0592)	(0.0592)	(0.0865)	(0.0768)	(0.0768)	(0.1103)	(0.0450)	(0.0450)	(0.0680)
*PIP*Benefits*	0.2542**	0.2565**	0.2511*	0.3621**	0.3636**	0.3596**	-0.6051***	-0.6091***	-0.6031***	0.2632**	0.2632**	0.2586**
	(0.0979)	(0.0979)	(0.0978)	(0.1270)	(0.1270)	(0.1270)	(0.1641)	(0.1642)	(0.1642)	(0.0997)	(0.0997)	(0.0997)
Female	0.1451***	0.1454***	.	0.0452*	0.0452*	.	0.2690***	0.2690***	.	0.3151***	0.3153***	.
	(0.0189)	(0.0189)	.	(0.0224)	(0.0224)	.	(0.0285)	(0.0285)	.	(0.0186)	(0.0186)	.
*Female*Disab*Benefits (IV)*			-0.1882			-0.2463+			0.1180			-0.1611
			(0.1159)			(0.1456)			(0.1881)			(0.1139)
*Female*Disab(IV)*			0.0877			0.0599			0.0420			0.0866
			(0.0808)			(0.1003)			(0.1295)			(0.0790)
*Female*Benefits*			0.1910*			0.1642			-0.1300			0.2603**
			(0.0850)			(0.1066)			(0.1373)			(0.0830)
First regions	-0.1144+	-0.0189	-0.1152+	-0.0019	-0.0481	-0.0034	0.0336	0.1476	0.0348	-0.0526	.	-0.0533
	(0.0691)	(0.0784)	(0.0691)	(0.0830)	(0.0949)	(0.0830)	(0.1041)	(0.1190)	(0.1041)	(0.0681)	.	(0.0681)
Diff. reg wage	0.0142*		0.0142*	0.0133		0.0132	-0.0239*		-0.0239*	0.0080		0.0080
	(0.0072)		(0.0072)	(0.0087)		(0.0087)	(0.0109)		(0.0109)	(0.0071)		(0.0071)
Log regional unem	-0.5045+		-0.5057+	-0.1185		-0.1250	0.4277		0.4324	-0.3469		-0.3452
	(0.2705)		(0.2704)	(0.3268)		(0.3268)	(0.4122)		(0.4122)	(0.2651)		(0.2650)
Wage_st_dev		-0.0047			0.0006			0.0020			-0.0037	
		(0.0043)			(0.0051)			(0.0065)			(0.0043)	
Unemp_st_dev		0.0477			-0.0406			0.1078			0.0376	
		(0.0557)			(0.0675)			(0.0850)			(0.0554)	
Observations	74206	74206	74206	74185	74185	74185	74110	74110	74110	73981	73981	73981
R-squared	0.18	0.18	0.18	0.097	0.097	0.097	0.056	0.056	0.056	0.14	0.14	0.14
ll	-1.54e+05	-1.54e+05	-1.54e+05	-1.68e+05	-1.68e+05	-1.68e+05	-1.86e+05	-1.86e+05	-1.86e+05	-1.52e+05	-1.52e+05	-1.52e+05

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variable: year – 2011-2012. 2sls: Two-Stage Least-Squares; satis: satisfaction; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Table 8. Self-assessed health in disabled population (PPO)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab 1	sah_disab 2	sah_disab 3	sah_disab 1	sah_disab 2	sah_disab 3	sah_disab 1	sah_disab 2	sah_disab 3
PIP	-0.1547 (0.3830)	-0.1914 (0.3825)	-0.1606 (0.3793)	-0.1192 (0.1608)	-0.1638 (0.1591)	-0.1153 (0.1605)	-0.0204 (0.0783)	-0.0671 (0.0746)	-0.0244 (0.0782)	0.0076 (0.1084)	-0.0399 (0.1056)	0.0063 (0.1086)
*Disab*Benefits (IV)*	-5.2990*** (0.8207)	-5.2911*** (0.8174)	-5.3441*** (0.9394)	-3.9756*** (0.2797)	-3.9848*** (0.2800)	-3.7840*** (0.3401)	-2.0455*** (0.0857)	-2.0441*** (0.0857)	-1.9139*** (0.1226)	-1.6115*** (0.1076)	-1.6123*** (0.1076)	-1.5073*** (0.1601)
*PIP*Disab*Benefits (IV)*	0.8416 (0.8699)	0.8196 (0.8703)	0.8266 (0.8717)	-0.7008+ (0.3809)	-0.7130+ (0.3814)	-0.6983+ (0.3821)	-0.7808*** (0.1849)	-0.7819*** (0.1850)	-0.7806*** (0.1854)	-0.4207+ (0.2344)	-0.4218+ (0.2345)	-0.4174+ (0.2337)
Disab(IV)	-1.7473*** (0.2740)	-1.7431*** (0.2735)	-1.4698*** (0.3732)	-1.7944*** (0.1048)	-1.7919*** (0.1047)	-1.6670*** (0.1561)	-1.2372*** (0.0517)	-1.2381*** (0.0517)	-1.0962*** (0.0779)	-0.9372*** (0.0832)	-0.9371*** (0.0831)	-0.8081*** (0.1231)
*PIP*Disab(IV)*	-0.1201 (0.4500)	-0.1271 (0.4506)	-0.1095 (0.4428)	0.2013 (0.1986)	0.2005 (0.1986)	0.1972 (0.1984)	0.2065+ (0.1123)	0.2062+ (0.1123)	0.2103+ (0.1125)	0.0696 (0.1787)	0.0705 (0.1789)	0.0699 (0.1793)
Benefits	2.8991*** (0.5427)	2.8936*** (0.5406)	2.8848*** (0.6426)	2.1101*** (0.1815)	2.1160*** (0.1817)	1.9590*** (0.2295)	1.1388*** (0.0602)	1.1381*** (0.0602)	0.9879*** (0.0878)	1.0235*** (0.0766)	1.0241*** (0.0767)	0.9879*** (0.1164)
*PIP*Benefits*	-0.5752 (0.6374)	-0.5589 (0.6376)	-0.5665 (0.6400)	0.4770+ (0.2725)	0.4854+ (0.2729)	0.4751+ (0.2735)	0.4661*** (0.1303)	0.4662*** (0.1303)	0.4655*** (0.1310)	0.2487 (0.1638)	0.2491 (0.1639)	0.2473 (0.1633)
Female	-0.0283 (0.0550)	-0.0286 (0.0550)	0.3836 (0.3587)	0.0025 (0.0307)	0.0018 (0.0307)	0.2708+ (0.1419)	-0.0143 (0.0228)	-0.0143 (0.0228)	0.1172* (0.0598)	-0.0778* (0.0318)	-0.0775* (0.0318)	0.0653 (0.0859)
*Female*Disab*Benefits (IV)*			0.0033 (0.8118)			-0.4622 (0.3424)			-0.2845+ (0.1503)			-0.2122 (0.1933)
*Female*Disab (IV)*			-0.5022 (0.4109)			-0.2097 (0.1772)			-0.2463** (0.0939)			-0.2561+ (0.1494)
*Female*Benefits*			0.0625 (0.6025)			0.3168 (0.2464)			0.2836** (0.1081)			0.0728 (0.1393)
First regions	0.3750*** (0.1138)		0.3740** (0.1138)	0.1676* (0.0813)		0.1664* (0.0813)	0.2639*** (0.0727)		0.2623*** (0.0727)	0.1860* (0.0900)		0.1820* (0.0901)
Diff. reg wage	-0.0072 (0.0070)		-0.0073 (0.0070)	-0.0072 (0.0070)		-0.0073 (0.0070)	-0.0072 (0.0070)		-0.0073 (0.0070)	-0.0072 (0.0070)		-0.0073 (0.0070)
Log regional unem	0.3050 (0.2690)		0.2947 (0.2689)	0.3050 (0.2690)		0.2947 (0.2689)	0.3050 (0.2690)		0.2947 (0.2689)	0.3050 (0.2690)		0.2947 (0.2689)
Wage_st_dev		-0.0038 (0.0042)			-0.0038 (0.0042)			-0.0038 (0.0042)			-0.0038 (0.0042)	
Unemp_st_dev		0.0774 (0.0556)			0.0774 (0.0556)			0.0774 (0.0556)			0.0774 (0.0556)	
Observations	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616
ll	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04
chi2	19823	19825	20286	19823	19825	20286	19823	19825	20286	19823	19825	20286

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variables: year – 2011-2012. PPO: Proportional Odds; SAH: self-assessed health; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

3.6 Robustness checks

We employ different robustness checks on the IV estimations which we present below. We also estimate with a control function to check the results obtained in the IV estimation.

3.6.1 Robustness checks on the IV estimation

3.6.1.1 Relevance of instrumental variables

Firstly, we test the relevance of the instruments we have used for the dummy variable *Disab*. The instruments used are *limit_a* (whether health problem affect amount work individuals can perform), *limit_k* (whether health problem affect the kind of work individuals can perform) and *year of birth*. The first check is based on the estimation results from Equation (3) (WB estimated in all sample), the main model we analyse which looks at the effects of the welfare reform on all individuals, and includes the disability variable, *Disab*, instrumented. The test we employ is a *weak* instruments test which is run by the Stata® command *estat firstage*. The test produces a range of diagnostic statistics from the first stage regression (auxiliary regression). The results obtained are presented below:

1. W*eak* instruments test (*estat firstage*)

Variable	R^2	Adjusted R^2	Partial R^2	Robust F(3,74138)	Prob > F	Shea's Partial R^2	Shea's adjusted partial R^2
disability	0.49	0.49	0.41	15135	0.00	0.41	0.41

The first two statistics, R squared and adjusted R squared are not very low neither very high, which is expected as there is a loss of precision when including instruments. However, they are not too low to indicate weak instruments. The partial R squared comes from the auxiliary model where *Disab* is regressed against covariates and instruments. Its values of 41% indicates that the instruments used have good explanatory power on the instrumented variable. F statistics is used to test the joint significance of the instruments; in this case the F statistics obtained (15,135) is considerably larger than the rule of thumb value (10) used to reject the null hypothesis (of no joint significance, meaning weak instruments) (Cameron, 2010). The statistics obtained indicate that the instruments are not weak.

The last two results represent the generalization named Shea's partial R squared. This test is useful when there are more than one endogenous variables in the model) (Cameron, 2010). As this is not the case in our model, the Shea's partial R squared are equal to partial R squared (41%).

Secondly, the relevance of instruments can be tested manually, by regressing the auxiliary model (endogenous variables regressed on instruments and covariates) and inspecting the diagnostic statistics, R squared, adjusted R squared and F statistics. The results of this model are presented below:

2. Manual test

R-squared = 0.4944

F(6, 74618) = 7750.92

Prob > F = 0.0000

The R squared is equal to the one obtained when the test is performed with Stata® command *estat firststage*, rounded to two decimals at 49%. The F statistics obtained is also large enough to reject the null hypothesis of no joint significance.

Thirdly, the relevance of instruments can be tested by inspecting the correlations between the endogenous variable and instruments used. The results presented below show that disability has a strong positive correlation with *limita* and *limitk* (0.62 and 0.69 respectively), and a negative correlation with *year of birth* (-0.036).

3. Correlation

	Disability	**LIMITA**	**LIMITK**	**Year of birth**
Disability	1			
LIMITA	0.6243	1		
LIMITK	0.6884	0.8223	1	
Year of birth	-0.0358	-0.0612	-0.0257	1

Based on the statistics and manual tests presented here, we conclude that our instrumental variables are not weak instruments and can be considered relevant in solving the endogeneity issue in our estimation.

3.6.1.2 Validity of Instrumental variables

A second robustness check tests the validity of instruments employed, commonly known as *overidentified test* or Hansen-Sargan test. The test can only be employed in overidentified models, when there is at least one additional instrument per endogenous variable. The null hypothesis of the test states that all instruments are valid, against the hypothesis that at least one instrument is not valid. The test is implemented in Stata® using the postestimations *estat overid* command (Cameron, 2010). The results of the test using the three instruments we have implemented are presented below:

Test of overidentifying restrictions with current IVs:

Score chi2(2) = 31.6868 (p = 0.0000)

At this value of chi squared we reject the null hypothesis and conclude that at least one instrument is not valid. We conducted the same test after including *lookm113* variable (*Reason why looking for another job*) as instrument as it was indicated to be a relevant instrument in preliminary tests. The results are presented below:

Test of overidentifying restrictions when including *lookm113*:

Score chi2(3) = 4.04129 (p = 0.2570)

With this estimation we do not reject the null hypothesis and conclude that overidentification restriction is valid. However, we decided not to include *lookm113* as there are very few observations (1,352 over the entire three-year period) and coefficients are not very different as seen in **Table 9**, compared to the results obtained in the model we estimated, reported in **Table 7** (complete results are presented in Appendix 3.11.5).

Table 9. Life satisfaction, happiness, worthiness, and anxiety – all sample with 3 IVs (2sls)

Variable	Life satis (1)	Life satis (2)	Life satis (3)	Happy (1)	Happy (2)	Happy (3)	Anxiety (1)	Anxiety (2)	Anxiety (3)	Worth (1)	Worth (2)	Worth (3)
PIP	-0.1359	0.0381	-0.1336	0.3969	0.5921	0.3907	-0.5040	-0.4998	-0.4998	0.0118	0.3740	0.0202
	(0.5221)	(0.4236)	(0.5203)	(0.7264)	(0.5928)	(0.7338)	(0.8287)	(0.8301)	(0.8301)	(0.5182)	(0.4180)	(0.5109)
Disab (IV)	-0.6341+	-0.6422+	-0.7289	-0.0151	-0.0381	0.2418	0.2343	0.0619	0.0619	-0.3737	-0.4081	-0.8241
	(0.3326)	(0.3305)	(0.4457)	(0.4688)	(0.4619)	(0.6116)	(0.5911)	(0.7888)	(0.7888)	(0.3723)	(0.3771)	(0.5169)
*PIP*Disab (IV)*	-0.6291	-0.4904	-0.6235	-0.7388	-0.6416	-0.7541	0.3676	0.3778	0.3778	-0.2719	-0.2802	-0.2419
	(0.6059)	(0.6109)	(0.6043)	(0.8617)	(0.8485)	(0.8704)	(1.0037)	(1.0098)	(1.0098)	(0.6387)	(0.6449)	(0.6312)
Benefits	-0.2699	-0.2557	-0.2623	-0.2140	-0.2103	-0.2346	-0.6597	-0.6459	-0.6459	0.2987	0.3028	0.3373
	(0.2425)	(0.2398)	(0.2457)	(0.3246)	(0.3212)	(0.3297)	(0.4053)	(0.4075)	(0.4075)	(0.2317)	(0.2312)	(0.2355)
Female	-0.1732	-0.2420	-0.2933	-0.0477	-0.0692	0.2776	-0.6719	-0.2954	-0.6774	-0.0599	-0.0831	-0.6263
	(0.2293)	(0.2323)	(0.4015)	(0.3065)	(0.3091)	(0.5583)	(1.3325)	(1.5410)	(1.3327)	(0.2228)	(0.2299)	(0.3888)
Female Disab (IV)*			0.1960			-0.5309			0.3564			0.9227+
			(0.5363)			(0.7447)			(0.9243)			(0.5585)
First regions	0.2864	-0.1386	0.2834	-0.2024	0.2488	-0.1943	-0.6719	-0.2954	-0.6774	0.1219	.	.
	(0.8473)	(0.9248)	(0.8473)	(1.1691)	(1.2977)	(1.1726)	(1.3325)	(1.5410)	(1.3327)	(0.8734)	.	.
% growth regional wage	0.1182		0.1185	0.0587		0.0579	-0.0310		-0.0305	0.0547		0.0562
	(0.0991)		(0.0991)	(0.1240)		(0.1240)	(0.1415)		(0.1418)	(0.1159)		(0.1134)
Log regional unem	-4.1774		-4.1472	-2.8523		-2.9343	-0.2717		-0.2167	-2.7302		-2.6107
	(3.3664)		(3.3699)	(4.2711)		(4.3048)	(5.3593)		(5.3704)	(3.1879)		(3.1782)
Regional wage (st_dev)		-0.1032*			-0.0352			0.1052			0.0178	
		(0.0498)			(0.0673)			(0.0795)			(0.0521)	
Regional unemp (st dev)		-0.1204			0.2345			-0.4928			-0.1942	
		(0.6973)			(0.8702)			(1.0929)			(0.7180)	
Observations	433	433	433	433	433	433	433	433	433	434	434	434
R-squared	0.26	0.26	0.26	0.13	0.13	0.13	0.18	0.18	0.18	0.17	0.17	0.18
ll	-832.656	-8312.076	-832.564	-974.251	-974.606	-973.898	-1056.058	-1054.983	-1055.949	-843.133	-843.711	-841.146

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variables: year – 2011 -2012. Disab: disability; PIP: personal independence payment; Satis: satisfaction; unemp: unemployment; 2sls: Two-Stage Least-Squares. Robust standard errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

3.6.1.3 Different IV estimations: 2SLS, LIML, GMM

If the instruments are weak, often is suggested to use alternative estimators, such as the *limited information maximum likelihood* (LIML) or *generalized method of moments* (GMM). LIML is asymptotically equivalent to 2sls but has been found to outperform both 2sls and GMM in finite samples. GMM depends largely on the weights used in estimation and can lead to the same estimators as 2sls depending on the weights employed and in presence of independent and heteroskedastic errors.[14] For robustness checks, we have estimated Equation (3) using OLS, 2sls, LIML and GMM and we present the comparative results in **Table 10** only for *life satisfaction* to exemplify the differences between estimators.[15]

Table 10. Wellbeing of individuals claiming benefits – Life satisfaction (alternative estimators)

Variable	OLS (1)	TWO SLS (1)	LIML (1)	GMM (1)	OLS (2)	TWO SLS (2)	LIML (2)	GMM (2)
Disab (IV)	-0.5820***	-0.7707***	-0.7711***	-0.7672***	-0.5818***	-0.7702***	-0.7707***	-0.7662***
	(0.0128)	(0.0302)	(0.0302)	(0.0301)	(0.0128)	(0.0302)	(0.0302)	(0.0302)
PIP	0.0849***	-0.0277	-0.0277	-0.0235	0.1017***	0.0276	0.0276	0.0274
	(0.0174)	(0.0343)	(0.0343)	(0.0343)	(0.0121)	(0.0236)	(0.0236)	(0.0236)
Benefits	-0.1209***	-0.1344***	-0.1344***	-0.1350***	-0.1208***	-0.1348***	-0.1347***	-0.1345***
	(0.0107)	(0.0201)	(0.0201)	(0.0201)	(0.0107)	(0.0202)	(0.0202)	(0.0202)
First regions	-0.0485	-0.1217+	-0.1217+	-0.1140	-0.0336	-0.0327	-0.0327	-0.0293
	(0.0359)	(0.0695)	(0.0695)	(0.0695)	(0.0403)	(0.0789)	(0.0789)	(0.0789)
% growth regional wage	0.0112**	0.0136+	0.0136+	0.0126+				
	(0.0038)	(0.0072)	(0.0072)	(0.0072)				
Log regional unem	-0.0917	-0.4965+	-0.4965+	-0.4595+				
	(0.1379)	(0.2723)	(0.2723)	(0.2722)				
Regional wage (st_dev)					-0.0030	-0.0050	-0.0050	-0.0049
					(0.0022)	(0.0043)	(0.0043)	(0.0043)
Regional unemp (st dev)					0.0321	0.0454	0.0454	0.0444
					(0.0287)	(0.0561)	(0.0561)	(0.0561)
	0.0112**	0.0136+	0.0136+	0.0126+				
Observations	214402	74206	74206	74206	214402	74206	74206	74206
R-squared	0.15	0.17	0.17	0.17	0.15	0.17	0.17	0.17
ll	-4.19e+05				-4.19e+05			
Chi2		10336	10335	10327		10336	10335	10319

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Disab: disability; PIP: personal independence payment; st dev: standard deviation; unemp: unemployment; Two SLS: two-stage least squares; Liml: limited information maximum likelihood; GMM: generalized method of moments. Robust standard errors in parentheses. + p<0.10* p<0.05 ** p<0.01 *** p<0.001

Firstly, we notice that 2sls, LIML and GMM lead to very similar coefficients across covariates. The small variations amongst the three estimators enforces the robustness of our results. Moreover, in both estimations, OLS leads to higher coefficients for *life satisfaction* compared to the three other estimators, which indicates the presence of endogeneity.

[14] For a full discussion on the different alternative estimators please see CAMERON, A. C., TRIVEDI, P. K. 2010. *Microeconometrics using Stata*®, Stata Press.

[15] Complete results for *life satisfaction, happiness, anxiety* and *worthwhile* are presented in Appendix 3.11.6. Estimations were not run for *SAH*, as it is not treated as a continuous variable and these estimations would not differentiate amongst this variable's categories.

3.6.2 Control function

A control function (CF) estimation is considered an alternative to the common 2sls estimation in the presence of endogenous variables. As with 2sls, for a CF estimation instrumental variables are also required. The basis of CF estimation is that in the auxiliary regression (where the endogenous variable is regressed on instruments and covariates) the residuals serve as a control functions as the variation produced by excluding the instruments from the main model will be contained by these residuals. As such, if these control functions are introduced in the main model along the endogenous variable, this latter will become exogenous (Wooldridge, 2015). For robustness checks, we estimate with CF Equations (3) and (4), and we present results below, for life satisfaction, happiness, anxiety and worthiness.

In **Table 11**, we present the results of estimating the four wellbeing indicators for the entire sample. We observe that results are very similar to those presented in **Table 7** where the same model was estimated with 2sls. For example, the coefficients for disabled individuals reporting *life satisfaction* were -0.73, rounded to two decimals, and in **Table 11** these coefficients are around 0.74, rounded to two decimals. Likewise, the statistical significance of coefficients is similar to those reported in **Table 7**. While the difference in coefficients are small between CF and 2sls estimation, we observe that CF estimation leads to smaller coefficients, with very few exceptions.

The results of Equation (4) estimated with CF are presented in **Table 12.** These results are also similar with the 2sls estimation presented in **Table 8** but the coefficients of the variable of interest, *disabled on benefits*, vary more than in the precedent estimation. With the exception of the coefficients *disab_benefit* and *disab*, all coefficients are similar. The difference in these results might be explained by instrumenting the interacted variable *disabled* and *benefits*. The coefficients of the other covariates are similar though, and statistical significance is also similar in both estimations. All tests conducted and presented in this section confirm that our estimations are robust.

Table 11. Life satisfaction, happiness, worthiness, and anxiety – all sample (CF - OLS)

Variable	Life satis (1)	Life satis (2)	Life satis (3)	Happy (1)	Happy (2)	Happy (3)	Anxiety (1)	Anxiety (2)	Anxiety (3)	Worth (1)	Worth (2)	Worth (3)
PIP	0.0755+	0.1310***	0.0755+	0.1348**	0.1639***	0.1340**	-0.2484***	-0.3134***	-0.2480***	0.0614	0.0962**	0.0617
	(0.0396)	(0.0311)	(0.0396)	(0.0500)	(0.0408)	(0.0500)	(0.0647)	(0.0536)	(0.0647)	(0.0388)	(0.0306)	(0.0388)
Disab (IV)	-0.7404***	-0.7400***	-0.7431***	-0.6307***	-0.6304***	-0.6007***	0.7217***	0.7213***	0.7052***	-0.4913***	-0.4911***	-0.5039***
	(0.0315)	(0.0315)	(0.0366)	(0.0382)	(0.0382)	(0.0442)	(0.0486)	(0.0486)	(0.0569)	(0.0308)	(0.0308)	(0.0362)
*PIP*Disab (IV)*	-0.1558***	-0.1547***	-0.1559***	-0.1541**	-0.1525**	-0.1535**	0.2615***	0.2577***	0.2612***	-0.1147**	-0.1140**	-0.1149**
	(0.0399)	(0.0399)	(0.0399)	(0.0504)	(0.0504)	(0.0504)	(0.0652)	(0.0652)	(0.0652)	(0.0396)	(0.0396)	(0.0396)
Benefits	-0.1344***	-0.1348***	-0.1342***	-0.0453+	-0.0455+	-0.0476+	0.0860**	0.0862**	0.0872**	0.0413*	0.0411*	0.0423*
	(0.0200)	(0.0200)	(0.0200)	(0.0242)	(0.0243)	(0.0243)	(0.0313)	(0.0313)	(0.0313)	(0.0194)	(0.0194)	(0.0194)
Female	0.1581***	0.1584***	0.1547***	0.0601**	0.0602**	0.0992**	0.2462***	0.2462***	0.2247***	0.3223***	0.3225***	0.3060***
	(0.0188)	(0.0189)	(0.0264)	(0.0223)	(0.0223)	(0.0334)	(0.0283)	(0.0283)	(0.0441)	(0.0186)	(0.0186)	(0.0260)
Female Disab (IV)*			0.0052			-0.0589			0.0324			0.0247
			(0.0338)			(0.0417)			(0.0539)			(0.0332)
First regions	-0.1213+	-0.0298	-0.1212+	-0.0078	-0.0581	-0.0088	0.0416	0.1599	0.0421	-0.0567	.	-0.0563
	(0.0691)	(0.0784)	(0.0691)	(0.0831)	(0.0949)	(0.0831)	(0.1041)	(0.1190)	(0.1041)	(0.0681)	.	(0.0681)
% growth regional wage	0.0140+		0.0140*	0.0135		0.0135	-0.0245*		-0.0245*	0.0078		0.0079
	(0.0071)		(0.0071)	(0.0087)		(0.0087)	(0.0109)		(0.0109)	(0.0071)		(0.0071)
Log regional unem	-0.4962+		-0.4958+	-0.1038		-0.1085	0.4037		0.4063	-0.3417		-0.3397
	(0.2706)		(0.2705)	(0.3269)		(0.3269)	(0.4124)		(0.4124)	(0.2652)		(0.2651)
Regional wage (st_dev)		-0.0048			0.0006			0.0018			-0.0037	
		(0.0043)			(0.0051)			(0.0065)			(0.0043)	
Regional unemp (st dev)		0.0464			-0.0415			0.1081			0.0372	
		(0.0558)			(0.0676)			(0.0850)			(0.0554)	
Observations	74206	74206	74206	74185	74185	74185	74110	74110	74110	73981	73981	73981
R-squared	0.18	0.18	0.18	0.097	0.097	0.097	0.056	0.056	0.056	0.14	0.14	0.14
ll	-1.54e+05	-1.54e+05	-1.54e+05	-1.68e+05	-1.68e+05	-1.68e+05	-1.86e+05	-1.86e+05	-1.86e+05	-1.52e+05	-1.52e+05	-1.52e+05

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variable: year – 2011-2012. CF: control function; OLS: ordinary least squares; satis: satisfaction; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10, * p<0.05 **, p<0.01 ***, p<0.001

Table 12. Wellbeing of disabled individuals claiming benefits (CF - OLS)

Variable	ls_cf_be n1	ls_cf_be n2	ls_cf_be n3	happy_cf_be n1	happy_cf_be n2	happy_cf_be n3	anxious_cf_be n1	anxious_cf_be n2	anxious_cf_be n3	worth_cf_be n1	worth_cf_be n2	worth_cf_be n3
PIP	0.0822+	0.1421***	0.0827+	0.1331*	0.1661**	0.1329*	-0.2454***	-0.3150***	-0.2452**	0.0732+	0.1109**	0.0743+
	(0.0435)	(0.0356)	(0.0435)	(0.0564)	(0.0483)	(0.0564)	(0.0744)	(0.0648)	(0.0744)	(0.0437)	(0.0365)	(0.0437)
*Disab*Benefit*	-3.8461***	-3.8298***	-3.7842***	-3.8547***	-3.8614***	-3.8042***	5.4022***	5.4364***	5.3977***	-2.5280**	-2.5154**	-2.4258**
	(0.8358)	(0.8362)	(0.8371)	(1.0253)	(1.0258)	(1.0277)	(1.3197)	(1.3197)	(1.3209)	(0.8349)	(0.8347)	(0.8361)
*PIP*Disab*Benefit*	-0.0925	-0.0916	-0.0894	-0.0362	-0.0358	-0.0342	0.0191	0.0185	0.0202	-0.0169	-0.0164	-0.0120
	(0.0836)	(0.0836)	(0.0836)	(0.1056)	(0.1056)	(0.1056)	(0.1354)	(0.1355)	(0.1354)	(0.0818)	(0.0818)	(0.0817)
Disab	0.9722**	0.9653**	0.9559*	1.0895*	1.0928*	1.0897*	-1.6898**	-1.7056**	-1.7015**	0.6349+	0.6295+	0.6060
	(0.3736)	(0.3738)	(0.3736)	(0.4594)	(0.4596)	(0.4594)	(0.5920)	(0.5920)	(0.5922)	(0.3736)	(0.3735)	(0.3735)
*PIP*Disab*	-0.0879+	-0.0879+	-0.0882+	-0.1277+	-0.1271+	-0.1276+	0.2403**	0.2384**	0.2393**	-0.0916+	-0.0916+	-0.0918+
	(0.0512)	(0.0512)	(0.0512)	(0.0671)	(0.0671)	(0.0671)	(0.0889)	(0.0890)	(0.0890)	(0.0533)	(0.0533)	(0.0533)
Benefits	2.2895***	2.2783***	2.2111***	2.3715***	2.3750***	2.3400***	-3.2976***	-3.3175***	-3.2797***	1.6330**	1.6246**	1.4777**
	(0.5231)	(0.5234)	(0.5252)	(0.6412)	(0.6415)	(0.6445)	(0.8259)	(0.8260)	(0.8286)	(0.5222)	(0.5221)	(0.5240)
*PIP*Benefits*	-0.0418	-0.0397	-0.0454	-0.0157	-0.0132	-0.0175	0.0249	0.0193	0.0247	-0.0483	-0.0471	-0.0546
	(0.0639)	(0.0639)	(0.0639)	(0.0830)	(0.0830)	(0.0830)	(0.1070)	(0.1070)	(0.1070)	(0.0607)	(0.0607)	(0.0606)
Female	0.0455	0.0463	.	-0.0523	-0.0524	.	0.4035***	0.4045***	.	0.2486***	0.2492***	.
	(0.0307)	(0.0307)	.	(0.0368)	(0.0368)	.	(0.0481)	(0.0481)	.	(0.0305)	(0.0305)	.
*Female*Disab*Benefits*			-0.1051			-0.0623			-0.1004			-0.1342+
			(0.0754)			(0.0929)			(0.1184)			(0.0750)
*Female*Disab*			0.0447			-0.0082			0.0844			0.0578
			(0.0446)			(0.0566)			(0.0748)			(0.0440)
*Female*Benefits*			0.1342*			0.0344			0.0346			0.2452***
			(0.0602)			(0.0757)			(0.0970)			(0.0599)
First regions	-0.0831	0.0490	-0.0828	0.0288	0.0197	0.0283	-0.0094	0.0508	-0.0078	-0.0319	.	-0.0318
	(0.0693)	(0.0800)	(0.0693)	(0.0836)	(0.0973)	(0.0836)	(0.1048)	(0.1222)	(0.1048)	(0.0686)	.	(0.0686)
Diff. reg wage	0.0116		0.0116	0.0107		0.0107	-0.0205+		-0.0205+	0.0062		0.0063
	(0.0072)		(0.0072)	(0.0087)		(0.0087)	(0.0110)		(0.0110)	(0.0071)		(0.0071)
Log regional unem	-0.5818*		-0.5791*	-0.1951		-0.1971	0.5327		0.5347	-0.3990		-0.3934
	(0.2717)		(0.2717)	(0.3279)		(0.3279)	(0.4140)		(0.4140)	(0.2659)		(0.2658)
Wage_st_dev		-0.0048			0.0005			0.0020			-0.0037	
		(0.0043)			(0.0051)			(0.0065)			(0.0043)	
Unemp_st_dev		0.0618			-0.0262			0.0868			0.0474	
		(0.0558)			(0.0677)			(0.0852)			(0.0554)	
Observations	74206	74206	74206	74185	74185	74185	74110	74110	74110	73981	73981	73981
R-squared	0.18	0.18	0.18	0.097	0.097	0.097	0.056	0.056	0.056	0.14	0.14	0.14
ll	-1.54e+05	-1.54e+05	-1.54e+05	-1.68e+05	-1.68e+05	-1.68e+05	-1.86e+05	-1.86e+05	-1.86e+05	-1.52e+05	-1.52e+05	-1.52e+05

Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. Base categories for dichotomous variable: year – 2011-2012. CF: control function; OLS: Ordinary Least-Squares; satis: satisfaction; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.7 Alternative specification

3.7.1 Disabled individuals claiming benefits affected by PIP cap

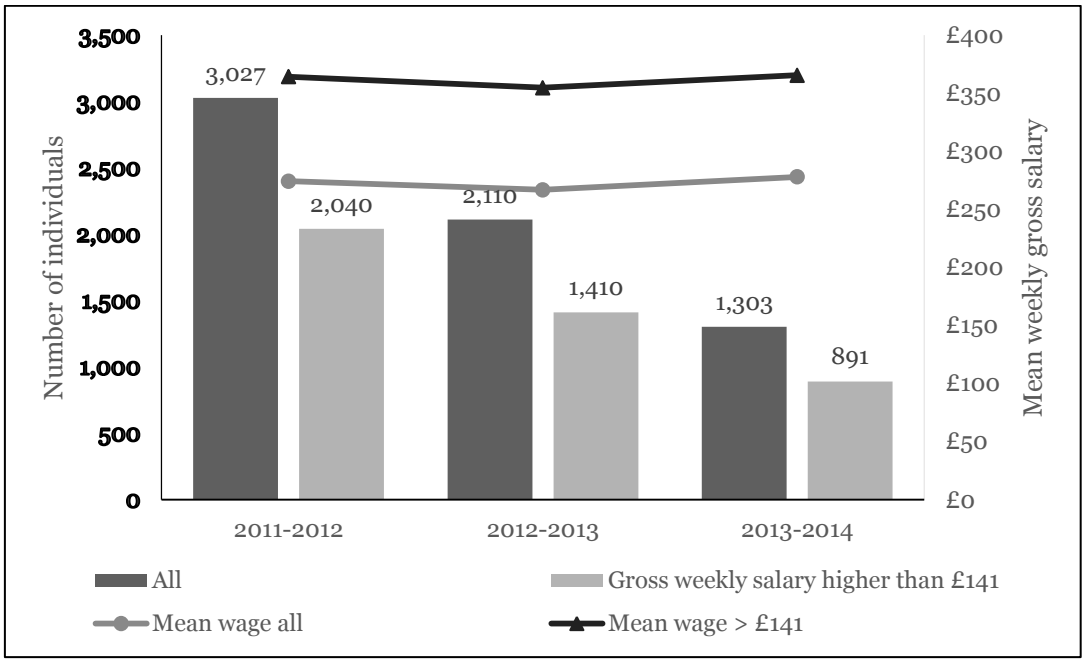
We are also interested to test our results in disabled individuals who were affected by the PIP cap. The welfare reform imposed a £141 cap per week for PIP. To check our results, we look at those whose reported gross weekly wage is higher than the cap. For this purpose, we first investigate how many disabled individuals claiming benefits reported higher wages than the cap in the three-year dataset, results that we present below. However, we cannot know whether the income they receive is composed solely of benefits and if these benefits are only those received for disability allowance. Nevertheless, we can test whether the wellbeing of those at the higher end of income are affected by the reform.

Table 13. Summary statistics on disabled individuals claiming benefit whose salaries are higher the PIP cap (£141)

	Year	Number of individuals	Mean weekly gross salary	Standard deviation
All observations	2011-2012	3,027	£274.17	£198.64
	2012-2013	2,110	£266.72	£191.34
	2013-2014	1,303	£277.89	£201.93
	Overall	6,440	£272.48	£196.97
Gross weekly salary higher than £141	2011-2012	2,040	£364.18	£182.06
	2012-2013	1,410	£354.59	£175.90
	2013-2014	891	£365.40	£186.84
	Overall	4,341	£361.32	£181.10

The statistics presented in **Table 13** show that over the three years over 60% of disabled individuals claiming benefits had reported higher salaries than the PIP cap. However, we also observe, that less individuals claimed benefits in the latter two years, a difference more obvious for those whose reported wages were higher than PIP cap. In the first year, there were 2,040 individuals with higher wages, while in the third year only 891. These statistics also show that while less individuals claimed benefits, overall and in those whose reported wages were higher than PIP cap, their reported wages increased slightly in the third year compared to the first one, illustrated in **Figure 4**, results confirmed by the Department of Work and Pensions statistics on PIP (DWP, 2017).

Figure 4. Number of disabled individuals claiming benefits and reported gross weekly wages, overall and higher than PIP cap



Given these statistics, we want to observe the impact of the welfare reform on disabled individuals claiming benefits whose reported wage is higher that the PIP cap. For this purpose, we estimated Equation (4) including a dummy for those disabled claiming benefits whose weekly wages are higher than £141. The results of our estimation are presented in **Table 14** below. The coefficients of interest, of *PIP*Disab(IV)*Benefit*Income_over_cap*, are not significant in any estimations. These results show that those whose income is higher than PIP cap are not reporting different scores for any wellbeing measure.

Table 14. Life satisfaction, happiness, anxiety and worthiness measures of WB in disabled population (2SLS)

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
PIP	-0.1408+	-0.2552+	-0.1402+	-0.0762	-0.0181	-0.0765	0.2483+	-0.1290	-0.2484+	-0.1049	-0.2624*	-0.1038
	(0.0772)	(0.1309)	(0.0772)	(0.1003)	(0.1611)	(0.01003)	(0.1316)	(0.2053)	(0.1315)	(0.0801)	(0.1324)	(0.0800)
*Disab (IV)*Benefit*Over_cap*	0.0122	0.0426	0.0024	-0.1044	-0.0689	-0.0978	0.0104	-0.0468	0.0077	-0.0958	-0.0800	-0.1217+
	(0.0668)	(0.0670)	(0.0691)	(0.0797)	(0.0799)	(0.0802)	(0.1009)	(0.1011)	(0.1015)	(0.0652)	(0.0654)	(0.0657)
PIP*Disab (IV)*Benefit*Over_cap	-0.0133	-0.1389	-0.0131	0.0273	-0.0750	0.0271	0.0322	0.1580	0.0323	-0.0103	-0.0765	-0.0093
	(0.1366)	(0.1212)	(0.1366)	(0.1664)	(0.1469)	(0.1664)	(0.2132)	(0.1876)	(0.2132)	(0.1366)	(0.1197)	(0.1366)
Disab (IV) Benefits*	-0.3856***	-1.6854*	-0.3840***	-0.4766***	0.1447	-0.4579***	0.6153***	2.8813*	0.6076***	-0.1890**	-1.1784	-0.2628***
	(0.0696)	(0.8076)	(0.0696)	(0.0869)	(0.9724)	(0.0907)	(0.1130)	(1.2357)	(0.1178)	(0.0662)	(0.7943)	(0.0703)
*PIP*Disab (IV)*Benefit*	-0.5907***	-0.3956	-0.5908***	-0.5953**	-0.2970	-0.5947**	1.0107***	-0.3154	1.0104***	-0.4924***	-0.5699+	0.4951***
	(0.1431)	(0.3091)	(0.1431)	(0.1859)	(0.3698)	(0.1859)	(0.2412)	(0.4582)	(0.2412)	(0.1477)	(0.3164)	(0.1476)
Disab (IV)	237.3104***	78.7918	237.2461***	201.5110**	279.6842+	201.7516**	-3.6e+02***	-34.8892	-3.6e+02***	144.8824*	14.6060	143.8357*
	(56.8660)	(126.6667)	(56.8637)	(69.0357)	(154.4661)	(69.0336)	(87.5770)	(198.7800)	(87.5832)	(56.8152)	(125.7656)	(56.8014)
*PIP*Disab (IV)*	9.9115	2.3292	9.9580+	7.3111	4.6437	7.2830	-11.5862	-30.8978+	-11.5745	11.1615+	-5.8179	11.2655>+
	(6.0484)	(12.1657)	(6.0472)	(7.1557)	(14.6177)	(7.1548)	(9.1141)	(18.2968)	(9.1134)	(5.8210)	(12.3427)	(5.8268)
Disab (IV) Over_cap*	-2.4e+02***		-2.4e+02***	.		.	360.6014**	34.2814	.	.		.
	(56.7808)		(56.7786)	.		.	* (87.4459)	(198.9835)	.	.		.
*Benefits*Over_cap*	-3.9802***	.	-3.9728***	.	.	.	5.9102***	.	.	.	.	.
	(0.9845)	.	(0.9845)	.	.	.	(1.5179)	.	.	.	.	.
*PIP*Disab (IV)*Over_cap*	-9.6063	-2.0436	-9.6530	-7.0224	-4.4329	-6.9945	10.9931	30.8315+	10.9816	-10.8773+	6.1717	-10.9803+
	(6.0296)	(12.2692)	(6.0283)	(7.1380)	(14.7431)	(7.1371)	(9.0911)	(18.4544)	(9.0904)	(5.8051)	(12.4488)	(5.8107)
*PIP*Benefit*Over_cap*	0.1434	0.0139	0.1429	0.1961	0.0009	0.1965	-0.4577+	0.4070	-0.4579+	0.1122	0.1499	0.1110
	(0.1612)	(0.2073)	(0.1612)	(0.2056)	(0.2517)	(0.2056)	(0.2634)	(0.3183)	(0.2634)	(0.1609)	(0.2096)	(0.1609)
Female	0.9557***	0.5967+	0.9330***	0.7277**	0.9950*	0.7440**	-0.9602**	-0.1704	-0.9669**	0.8148***	0.4996	0.7501***
	(0.1927)	(0.3626)	(0.1953)	(0.2343)	(0.4433)	(0.2347)	(0.2963)	(0.5704)	(0.2974)	(0.1927)	(0.3607)	(0.1927)
*Female*Disab (IV)*Benefits*			0.0335			-0.0390			0.0161			0.1541***
			(0.0562)			(0.0500)			(0.0630)			(0.0421)
First regions	-0.1307+	-0.0374	-0.1305+	-0.0147	-0.0511	-0.0150	0.0858	0.1001	0.0859	-0.0609	0.0182	-0.0596
	(0.0718)	(0.0790)	(0.0718)	(0.0862)	(0.0961)	(0.0862)	(0.1075)	(0.1198)	(0.1075)	(0.0709)	(0.0780)	(0.0708)
Diff. reg wage	0.0220**		0.0220**	0.0160+		0.0160+	-0.0329**		-0.0329**	0.0111		0.0111
	(0.0079)		(0.0079)	(0.0094)		(0.0094)	(0.0119)		(0.0119)	(0.0077)		(0.0077)
Log regional unem	-0.2710		-0.2699	0.1293		0.1277	0.1813		0.1819	-0.1870		-0.1813
	(0.2835)		(0.2835)	(0.3439)		(0.3439)	(0.4319)		(0.4319)	(0.2803)		(0.2803)
wage_st_dev		-0.0046			0.0058			0.0030			-0.0046	
		(0.0045)			(0.0055)			(0.0070)			(0.0046)	
unemp_st_dev		0.0610			-0.0018			0.0446			0.0550	
		(0.0600)			(0.0731)			(0.0925)			(0.0593)	
Constant	11.2245***	9.5667***	11.2299***	9.1525***	9.9962***	9.1500***	-1.3592	1.0734	-1.3581	9.4461***	8.1438***	9.4564***
	(0.7503)	(0.8252)	(0.7505)	(0.8953)	(0.9998)	(0.8954)	(1.1306)	(1.2892)	(1.1307)	(0.7342)	(0.8176)	(0.7342)
Observations	69250	76250	69250	69232	76233	69232	69169	76170	69169	69036	76026	69036
R-squared	0.18	0.18	0.18	0.098	0.097	0.098	0.059	0.057	0.059	0.14	0.14	0.14
ll	-1.44e+05	-1.59e+05	-1.44e+05	-1.57e+05	-1.73e+05	-1.57e+05	-1.73e+05	-1.91e+05	-1.73e+05	-1.42e+05	-1.57e+05	-1.42e+05

*Income_over_cap, PIP*over_cap, Benefits* and *PIP*Benefits* dropped due to multicollinearity.
Control variables: gender, married, age, age squared, education, education squared, age when left full time education, age when left full time education (squared), accommodation, ethnicity, religion, occupation, length of time at address, smoking status, interview type, regional dummies, seasonal dummies. 2sls: Two-Stage Least-Squares; satis: satisfaction; st dev: standard deviation; unemp: unemployed. Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.8 Conclusions

The welfare reform started in April 2013 was meant to bring most of state benefits and allowances under one umbrella and make the payment process easier. The other objective was to reform how disability allowances are awarded. However, these changes unsettled greatly individuals directly affected, fearing they will receive lower amounts or none. Despite this, the ONS statistics on wellbeing shows that overall wellbeing indicators have not decreased since 2013. We tested if these results hold when we control for everything else and we focused on the disabled population and those living with a disability and claiming benefits, who are directly affected by the reform.

The results including only the disabled population reveal that those receiving state benefits report, on average, lower *life satisfaction* and *happiness* levels compared to those who do not receive benefits. The results are significant when comparing *life satisfaction* levels for disabled individuals claiming benefits after the reform with before. Disabled individuals claiming benefits are also more likely to report lower scores of *self-assessed health,* but the welfare reform did not affect them differently. This analysis is also useful in investigating the main determinants of wellbeing of disabled individuals, which have been shown to be personal characteristics (such as gender, age, marital status, and employment status), confirming existing literature.

For the full sample analysis, we estimated the impact of the welfare reform on *life satisfaction*, *happiness*, *anxiety* and *worthiness* with 2sls and for *self-assessed health* with a *Partial Proportional Odds Model*. For all models, we instrumented disability due to its potential endogeneity. These analyses confirm that disabled individuals are worse off in terms of all measures of wellbeing, compared to individuals who are not living with a disability. Disabled individuals report much lower levels for *life satisfaction, happiness* and *worthiness*, and report higher levels of *anxiety* compared to those living without a disability. They are also more likely to report lower scores of *SAH* compared to the control group. Disabled individuals report lower levers of *life satisfaction* after the reform was implemented.

Thirdly, we analyse the effects of the reform on those living with a disability and claiming benefits, in a *diff-in-diff-in-diff* estimation, implementing the same methodology as in the previous analysis. The results obtained in this estimation show that people living with a disability and claiming benefits are worse off in terms of wellbeing, reporting lower levels of *life satisfaction*, *happiness* and *worthiness*, after the welfare reform. They are also more anxious than before, and less likely to report a high score on *self-assessed health*.

This analysis shows first-hand the effects of a government policy on individuals' welfare. The recent welfare reform comes in line of many previous reforms, targeted mostly at disability allowance aimed to decrease the public spending on state benefits. The disability spending has decreased since its peak values in 1995-1996 when it represented 1.6% of national income, but at the same time the overall the number of those receiving disability allowance has increased (Banks et al., 2015). However, the statistics on PIP shows that while less people receive benefits, more receive a higher amount compared to DLA. These statistics are also confirmed

in our sample. In the APS survey, there were 3,027 disabled individuals claiming benefits in 2011/2012, and in 2013/2014 only 1,303. Meanwhile, the mean reported weekly wage increased from £274 to £278 over the same period. By the end of October 2017, 21% of DLA claimants had their PIP claim refused, resulting in a significant number of individuals who are not receiving state benefits anymore.

Moreover, these results show that while people might have adapted to the last recession (see results in Chapter 1), as shown by the positive estimates for *life satisfaction* over time obtained in the first chapter (see section 1.11.5) individuals affected directly by a government reform report lower levels of wellbeing. Beyond the decline in *life satisfaction* and *happiness*, which are common wellbeing measures used in existing literature, this chapter has also shown increasing levels of *anxiety* in individuals. Although not much research has been published yet on the impact of the welfare reform in the UK, interviews with affected individuals shows them experiencing insecurity, fear, stress and even suicidal thoughts. This last reform has been extensively mediatised, with many cases of individuals ended up in huge debts due to reduced or no benefits, and large number of cases being reassessed.

Our analysis has several limitations. Mainly, it would be advisable to expand our analysis to include the latest waves of the APS so that the assumptions of the *diff and diff* models can be tested. In view of the results obtained in the previous two chapters (people adapt to external shocks), we expect to see some recovery in wellbeing scores few years after the reform was implemented. Also, although we have performed the commonly applied robustness tests in an IV estimation, there is still uncertainty on the validity of instruments used. However, under all robustness checks performed, we obtained very similar results to those estimated with 2sls and the gap in coefficients between IV estimations and OLS indicates not only the presence of endogeneity but also the possibility that our method might have corrected for the issue. The analysis would have been more relevant had we controlled for the type or severity of disability and benefits individuals receive to determine the impact the welfare reform had on individuals most affected. However, this level of details is not provided in the APS data. Specifically, it would have been interesting to distinguish between types of disabilities for which individuals might not be eligible for benefits under the new welfare scheme. We also acknowledge the limitations of employing a pooled cross-sectional data compared to a panel series.

3.9 References

1. Advice, C. *Moving from DLA to PIP* [Online]. Available: https://www.citizensadvice.org.uk/benefits/sick-or-disabled-people-and-carers/pip/before-claiming/if-you-get-dla/ 2018].
2. Albrecht, G. L. & Devlieger, P. J. 1999. The disability paradox: high quality of life against all odds. *Soc Sci Med,* 48**,** 977-88.
3. Banks, J., Blundell, R. & Emmerson, C. 2015. Disability Benefit Receipt and Reform: Reconciling Trends in the United Kingdom. *J Econ Perspect,* 29**,** 173-90.
4. Barron, J., Asch, D., Fagerlin, A., Jepson, C. 2003. 'Effect of assessment method on the discrepancy between judgements of health disorders people have and do not have: a web study. *Medical Decision Making,* 23**,** 442-434.
5. Blanchflower, D. G., Oswald, A. J. 2004 Money, sex and happiness: an empirical study. *Scandinavian Journal of Economics,* 106**,** 393–415.
6. Boyd, N. F., Sutherland, H. J., Heasman, K. Z., Tritchler, D. L. & Cummings, B. J. 1990. Whose utilities for decision analysis? *Med Decis Making,* 10**,** 58-67.
7. Brickman, P., Coates, D. & Janoff-Bulman, R. 1978. Lottery winners and accident victims: is happiness relative? *J Pers Soc Psychol,* 36**,** 917-27.
8. Buick, D. L., Petrie, K. J. 2002. "I know just how you feel": the validity of healthy women's perceptions of breast-cancer patients receiving treatment. *Journal of Applied Social Psychology,* 32**,** 110-123.
9. Butler, P., Siddique, H. 2016. The bedroom tax explained *The Guardian*.
10. Cameron, A. C., Trivedi, P. K. 2010. *Microeconometrics using Stata*®, Stata Press.
11. Clark, A. E., Oswald, A. J. 1994 Unhappiness and unemployment. *The Economic Journal,* 104**,** 648–659.
12. Damschroder, L. J., Zikmund-Fisher, B. J. & Ubel, P. A. 2005. The impact of considering adaptation in health state valuation. *Soc Sci Med,* 61**,** 267-77.
13. De Wit, G. A., Busschbach, J. J. & De Charro, F. T. 2000. Sensitivity and perspective in the valuation of health status: whose values count? *Health Econ,* 9**,** 109-26.
14. Dolan, P., Peasgood, T., White, M. 2008. Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective wellbeing. *Journal of Economic Psychology,* 29**,** 94-122.
15. DWP, D. F. W. A. P. 2013. *Universal Credit claimants in Pathfinder areas – experimental official statistics to September* [Online]. Available: https://www.gov.uk/government/statistics/universal-credit-pathfinder-statistics-apr-2013-to-30-sept-2013.
16. DWP, D. F. W. A. P. 2016. *Disability Living Allowance and Personal Independence Payment – the main differences* [Online]. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516961/main-differences-between-disability-living-allowance-and-personal-independence-payment-leaflet.pdf.
17. DWP, D. F. W. A. P. 2017. *Personal Independence Payment: Official Statistics* [Online]. Available:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/666525/pip-statistics-to-october-2017.pdf 2018].

18. Easterlin, R. 2006 Life cycle happiness and its sources: Intersections of psychology, economics and demography. *Journal of Economic Psychology,* 27**,** 463–482.
19. Easterlin, R. A., Mcvey, L. A., Switek, M., Sawangfa, O. & Zweig, J. S. 2010. The happiness-income paradox revisited. *Proc Natl Acad Sci U S A,* 107**,** 22463-8.
20. Ferrer-I-Carbonell, A., Frijters, P. 2004. How important is methodology for the estimates of the determinants of happiness? *The Economic Journal,* 114**,** 641–659.
21. Freedman, V. A., Stafford, F., Schwarz, N., Conrad, F. & Cornman, J. C. 2012. Disability, participation, and subjective wellbeing among older couples. *Soc Sci Med,* 74**,** 588-96.
22. Garthwaite, K. 2014. Fear of the Brown Envelope: Exploring Welfare Reform with Long-Term Sickness Benefits Recipients. *SOCIAL POLICY & ADMINISTRATION,* 48**,** 782-798.
23. Gov.uk. 2017a. *Benefit cap* [Online]. Available: https://www.gov.uk/benefit-cap/benefit-cap-amounts.
24. Gov.uk. 2017b. *Disability Living Allowance (DLA) for adults* [Online]. Available: https://www.gov.uk/dla-disability-living-allowance-benefit/what-youll-get.
25. Gov.uk. 2017c. *Personal Independence Payment (PIP)* [Online]. Available: https://www.gov.uk/pip.
26. Harris, N. 2014. Welfare Reform and the Shifting Threshold of Support for Disabled People. *The Modern Law Review,* 77**,** 888-927.
27. Haveman, R., Wolfe, B. 1995. The Determinants of Children's Attainments: A Review of Methods and Findings. *Journal of Economic Literature,* 33**,** 1829-1878.
28. Kahneman, D., Diener, E., Schwarz, N. 1999. Foundations of hedonic psychology: scientific perspectives on enjoyment and suffering. *New York: Russell Sage Foundation*.
29. Milligan, K., Stabile, M. 2011. Do Child Tax Benefits Affect the Well-being of Children? Evidence from Canadian ChildBenefit Expansions. *American Economic Journal: Economic Policy,* 3**,** 175-295.
30. Motability. *The Car and Scooter scheme* [Online]. Available: https://www.motability.co.uk/ 2018].
31. National Archives, T. N. A. 2005. *Disability Discrimination Act 1995* [Online]. Available: http://www.legislation.gov.uk/ukpga/1995/50/section/1.
32. ONS, O. F. N. S. 2014. *Annual Population Survey: Personal Well-Being, April 2011 - March 2014* [Online]. Available: http://doi.org/10.5255/UKDA-SN-7592-1.
33. ONS, O. F. N. S. 2017a. *Supplementary information to accompany the three year Annual Population Survey/Personal Well-being Dataset* [Online]. Available: https://discover.ukdataservice.ac.uk/catalogue/?sn=7961&type=data%20catalogue#documentation.
34. ONS, O. F. N. S. 2017b. *UK Data Archive Data Dictionary: Pooled Datasets* [Online]. Available:

https://discover.ukdataservice.ac.uk/catalogue/?sn=7961&type=data%20catalogue#documentation.

35. ORG, C. A. R. E. 2014. *Welfare Reform – A Summary of the Main Changes to Social Security Benefits* [Online]. Available: http://careandrepair-england.org.uk/wp-content/uploads/2014/12/Welfare-Reform-Briefing-2012-Final.pdf.
36. Oswald, A. J. 1997. Happiness and economic performance. *The Economic Journal,* 107**,** 1815–1831.
37. Oswald, A. J., Powdthavee, N. 2008. Does happiness adapt? A longitudinal study or disability with implications for economists and judges. *Journal of Public Economics,* 92**,** 1061-1077.
38. Patrick, R. 2014. Working on Welfare: Findings from a Qualitative Longitudinal Study Into the Lived Experiences of Welfare Reform in the UK. *Journal of Social Policy,* 43**,** 705-725.
39. Pinquart, M. & Sorensen, S. 2000. Influences of socioeconomic status, social network, and competence on subjective well-being in later life: a meta-analysis. *Psychol Aging,* 15**,** 187-224.
40. Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., Ubel, P. A. 2005. 'Ignorance of hedonic adaptation to hemodialysis: a study using ecological momentary assessment'. *Journal of Experimental Psychology: General,* 134**,** 3-9.
41. Sackett, D. L. & Torrance, G. W. 1978. The utility of different health states as perceived by the general public. *J Chronic Dis,* 31**,** 697-704.
42. Schulz, R. & Decker, S. 1985. Long-term adjustment to physical disability: the role of social support, perceived control, and self-blame. *J Pers Soc Psychol,* 48**,** 1162-72.
43. Ubel, P. A., Loewenstein, G. & Jepson, C. 2005. Disability and sunshine: can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation? *J Exp Psychol Appl,* 11**,** 111-23.
44. Williams, R. 2006. Generalized ordered logit/partial proportional odds models for ordinal dependent variables. *The Stata Journal,* 6**,** 58–82.
45. Winkelmann, L., Winkelmann, R. 1998. Why are the unemployed so unhappy? Evidence from panel data. *Economica,* 65**,** 1-15.
46. Wooldridge, J. M. 2015. Control function methods in applied econometrics. *J. Human Resources,* 50**,** 420-445.
47. Wooldridge, J. M. 2016. *Introductory Econometrics,* USA, Cengage Learning.

3.10 Supporting Information

The Brant test, part of the *SPost* Stata routine routine (Williams, 2006), is implemented to determine whether the assumption of Parallel Lines is violated. A binary logistic regression is run for every *k*-1 (*k*- number of categories of the dichotomous variable) separately. The coefficients obtained are then tested for statistically significant difference. We implemented the Brant test only for the estimations on self-assessed health, as for the other dependent variables included we implemented an OLS.

Table A1 presents the estimates for *k*-1 binary regressions associated to each category. **Table A2** shows the coefficients are statistically different, and thus, that the Proportional Odds assumption is violated. Complete results are presented in Appendix 3.11.1.

Table A1. Estimated coefficients from k-1 binary regressions

Variable	SAH > 1	SAH > 2	SAH > 3	SAH > 4
Benefits	-0.69603	-0.67598	-0.40359	-0.20624
Married	0.141141	0.195192	0.225601	0.162519
Female	0.092167	0.143389	0.105748	0.026084
Education	0.088529	-0.04157	-0.06006	-0.15794
Education squared	-0.01497	-0.00535	-0.01562	-0.00567

SAH: self-assessed health

Table A2. Brant test of parallel regression assumption

Variable	chi2	P > chi2	Degrees of freedom
All	1095.04	0.00	30
Benefits	118.56	0.00	3
Married	6.85	0.08	3
Female	9.85	0.02	3
Education	11.56	0.01	3
Education squared	8.11	0.04	3

A significant test statistic provides evidence that the parallel regression assumption has been violated

3.11 Appendices

3.11.1 Complete Brant test results

Model A: sah_disab1

Table A3. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	y>4	chi2	p>chi2	df
All					1241.77	0	63
PIP	-0.05837456	-0.11540572	-0.09989863	-0.1175214	1.34	0.719	3
Benefits	-0.7646651	-0.72609812	-0.40324298	-0.17136567	153.38	0	3
Married	-0.01099459	0.02586832	0.12585314	0.0822897	17.25	0.001	3
Female	0.11190505	0.18908598	0.11532517	0.01672326	20.34	0	3
Age	-0.15208841	-0.17896913	-0.13013285	-0.09450455	63.08	0	3
Age squared	0.00167302	0.00201345	0.00134506	0.00094121	98.58	0	3
Education	0.15444107	0.04346602	-0.01626378	-0.18442011	21.44	0	3
Education squared	-0.01816265	-0.01189557	-0.01397023	0.00426558	7.9	0.048	3
Age_left_FT_educ	0.02196179	0.03137462	0.01025317	0.02557013	3.9	0.272	3
Age_left_educ_squared	0.0002126	-0.00022343	0.00042516	-0.00063941	6.13	0.106	3
Type of accommodation	-0.13766853	-0.15626537	-0.18417647	-0.18335487	7.81	0.05	3
Ethnicity	-0.01904317	-0.00562096	-0.03026447	-0.05449394	13.11	0.004	3
Religion	-0.07347233	-0.06044278	-0.04852723	-0.05951094	3.09	0.378	3
Employment	-0.41215145	-0.36476062	-0.23850713	-0.17584301	561.55	0	3
Length of time at current address	-0.01312937	-0.00595281	-0.02790558	-0.03403011	7.06	0.07	3
Smoking status	0.11309363	0.1673936	0.18672784	0.19612114	7.91	0.048	3
Diff. reg wage	-0.04659004	-0.02397601	-0.01004812	-0.00986836	5.68	0.128	3
Log regional unemp	-0.10739151	-0.01863487	-0.26951335	-0.03416809	11.12	0.011	3
Interview type	-0.01616471	-0.134848	-0.26872709	-0.35872045	47.08	0	3
Region	0.00422104	0.00970206	0.00651581	0.02393849	9.79	0.02	3
Season	-0.01229649	0.00014651	-0.00570716	0.00647452	1.26	0.74	3
Constant	8.2507514	6.4696298	4.3948995	1.1947945			

A significant test statistic provides evidence that the parallel regression assumption has been violated

Model B: sah_disab2

Table A4. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	y>4	chi2	p>chi2	df
All					1230.98	0	63
PIP	-0.13168495	-0.15392844	-0.09104227	-0.13184552	4.88	0.181	3
Benefits	-0.76314526	-0.72463595	-0.40299864	-0.17129009	152.46	0	3
Married	-0.01096634	0.02638822	0.12785333	0.08252239	17.8	0	3
Female	0.1117489	0.18857834	0.11459725	0.01646015	20.29	0	3
Age	-0.15174819	-0.17868435	-0.13030648	-0.09453403	62.48	0	3
Age squared	0.00166769	0.00200911	0.00134647	0.00094156	97.52	0	3
Education	0.15311074	0.04294287	-0.01514429	-0.18441057	21.34	0	3
Education squared	-0.01804283	-0.01181859	-0.01411075	0.00425717	8	0.046	3
Age_left_FT_educ	0.0218724	0.03178303	0.01093648	0.0256201	3.79	0.286	3
Age_left_educ_squared	0.00019857	-0.00025143	0.00039771	-0.00064087	5.99	0.112	3
Type of accommodation	-0.13934102	-0.15753162	-0.18621767	-0.1835814	8.04	0.045	3
Ethnicity	-0.02088035	-0.0087155	-0.03400038	-0.05442185	11.76	0.008	3
Religion	-0.07314239	-0.06061225	-0.04855881	-0.05939756	3.03	0.387	3
Employment	-0.41206574	-0.36456382	-0.2387708	-0.17592746	559.06	0	3
Length of time at current address	-0.01363776	-0.00633121	-0.02892221	-0.0342582	7.36	0.061	3
Smoking status	0.11177546	0.16683498	0.18646969	0.19602476	8.14	0.043	3
Wage_st_dev	0.00111815	0.00139688	0.00042382	-3.26E-06	1.45	0.694	3
Unemp_st_dev	0.00701001	0.00744423	0.05386331	0.00001864	4.74	0.192	3
Interview type	-0.02288468	-0.13895439	-0.26871112	-0.35959882	45.09	0	3
Region	0.00716641	0.01111374	0.01543325	0.02436321	5.54	0.137	3
Season	-0.01253236	-0.00013388	-0.00597295	0.00639047	1.27	0.736	3
Constant	7.9731784	6.3800957	3.7326262	1.119635			

A significant test statistic provides evidence that the parallel regression assumption has been violated

Model C: sah_disab3

Table A5. Estimated coefficients from j-1 binary regressions and Brant test of parallel regression assumption

Variable	y>1	y>2	y>3	y>4	chi2	p>chi2	df
All					1242.56	0	66
PIP	-0.13191116	-0.15376719	-0.09090077	-0.1320757	4.88	0.181	3
Benefits	-0.76313421	-0.72468443	-0.40300389	-0.17123051	152.51	0	3
First regions	0.04695907	-0.08365439	0.04609639	-0.05129596	11.62	0.009	3
Married	-0.01025949	0.0254785	0.12827298	0.08207892	18.12	0	3
Female	0.11177364	0.18852383	0.11461095	0.01642404	20.28	0	3
Age	-0.15186041	-0.17855635	-0.13036326	-0.09446619	62.25	0	3
Age squared	0.00166892	0.00200776	0.00134705	0.00094082	97.19	0	3
Education	0.15314987	0.04288501	-0.01511245	-0.18442999	21.34	0	3
Education squared	-0.01802938	-0.01184288	-0.01410179	0.0042447	7.98	0.046	3
Age_left_FT_educ	0.02187882	0.03171646	0.01100002	0.0255281	3.74	0.291	3
Age_left_educ_squared	0.00019833	-0.00024778	0.00039505	-0.00063763	5.91	0.116	3
Type of accommodation	-0.13946551	-0.15732872	-0.18631326	-0.18349632	8.12	0.044	3
Ethnicity	-0.02074786	-0.0090245	-0.03384156	-0.05460171	11.49	0.009	3
Religion	-0.07320624	-0.06047398	-0.04863039	-0.05929117	2.99	0.393	3
Employment	-0.41221067	-0.364359	-0.23887504	-0.17582555	557.37	0	3
Length of time at current address	-0.01366499	-0.00628691	-0.02894356	-0.03424322	7.4	0.06	3
Smoking status	0.11204291	0.16643621	0.18663878	0.19586654	8.1	0.044	3
Wage_st_dev	0.0011004	0.00142297	0.00041562	1.29E-06	1.53	0.675	3
Unemp_st_dev	0.02137755	-0.01627297	0.06516423	-0.01123299	10.6	0.014	3
Interview type	-0.02246948	-0.1396185	-0.26845526	-0.35987179	44.98	0	3
Region	0.01031849	0.00574144	0.01815946	0.02148648	7.59	0.055	3
Season	-0.01255058	-0.00016781	-0.00596222	0.00637271	1.26	0.738	3
Constant	7.9383323	6.4411418	3.7014467	1.1526257			

A significant test statistic provides evidence that the parallel regression assumption has been violated

3.11.2 Welfare Reform, Benefits, and Wellbeing – disabled population (complete results)

3.11.2.1 Life satisfaction, happiness, anxiety and worthiness measures of WB in disabled population (OLS)

Variable	ls_disab1	ls_disab2	ls_disab3	happy_disab1	happy_disab2	happy_disab3	anxious_disab1	anxious_disab2	anxious_disab3	worth_disab1	worth_disab2	worth_disab3
PIP	-0.0280	0.0372	0.0369	-0.0067	0.0145	0.0144	-0.0582	-0.0643	-0.0637	-0.0325	0.0023	0.0025
	(0.0510)	(0.0410)	(0.0410)	(0.0621)	(0.0507)	(0.0507)	(0.0801)	(0.0660)	(0.0660)	(0.0521)	(0.0423)	(0.0423)
Benefits	-0.1658***	-0.1668***	-0.1602***	-0.0895**	-0.0906**	-0.0896**	0.0772+	0.0782+	0.0637	0.0144	0.0139	0.0085
	(0.0280)	(0.0280)	(0.0291)	(0.0334)	(0.0334)	(0.0348)	(0.0425)	(0.0424)	(0.0440)	(0.0268)	(0.0268)	(0.0279)
*PIP*Benefits*	-0.1068*	-0.1038*	-0.1033*	-0.0204	-0.0156	-0.0155	0.0236	0.0186	0.0175	-0.0457	-0.0436	-0.0441
	(0.0511)	(0.0510)	(0.0510)	(0.0619)	(0.0619)	(0.0619)	(0.0791)	(0.0791)	(0.0791)	(0.0520)	(0.0520)	(0.0520)
Married	0.7597***	0.7598***	0.7597***	0.5818***	0.5816***	0.5816***	-0.2323***	-0.2321***	-0.2318***	0.5459***	0.5459***	0.5459***
	(0.0241)	(0.0241)	(0.0241)	(0.0279)	(0.0279)	(0.0279)	(0.0344)	(0.0344)	(0.0344)	(0.0233)	(0.0233)	(0.0233)
Female	0.1504***	0.1509***	0.1509***	0.0484+	0.0484+	0.0484+	0.2633***	0.2635***	0.2635***	0.3306***	0.3307***	0.3307***
	(0.0230)	(0.0230)	(0.0230)	(0.0267)	(0.0267)	(0.0267)	(0.0333)	(0.0333)	(0.0333)	(0.0227)	(0.0227)	(0.0227)
Age	-0.1101***	-0.1102***	-0.1101***	-0.1011***	-0.1010***	-0.1010***	0.1080***	0.1079***	0.1078***	-0.0579***	-0.0579***	-0.0579***
	(0.0067)	(0.0067)	(0.0067)	(0.0077)	(0.0077)	(0.0077)	(0.0097)	(0.0097)	(0.0097)	(0.0067)	(0.0067)	(0.0067)
Age squared	0.0012***	0.0012***	0.0012***	0.0012***	0.0012***	0.0012***	-0.0012***	-0.0012***	-0.0012***	0.0007***	0.0007***	0.0007***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.0062	-0.0073	-0.0077	0.0666	0.0662	0.0661	-0.0485	-0.0484	-0.0474	0.0090	0.0080	0.0084
	(0.0385)	(0.0385)	(0.0385)	(0.0460)	(0.0460)	(0.0460)	(0.0594)	(0.0594)	(0.0594)	(0.0378)	(0.0378)	(0.0378)
GCE, A-level or equivalent	-0.0496	-0.0506	-0.0506	0.0255	0.0250	0.0250	-0.0927+	-0.0926+	-0.0925+	-0.0273	-0.0282	-0.0282
	(0.0313)	(0.0313)	(0.0313)	(0.0375)	(0.0375)	(0.0375)	(0.0482)	(0.0482)	(0.0482)	(0.0310)	(0.0310)	(0.0311)
GCSE grades A-C or equivalent*	-0.0837**	-0.0840**	-0.0842**	0.0119	0.0119	0.0119	-0.1208**	-0.1209**	-0.1204**	-0.0388	-0.0388	-0.0386
	(0.0300)	(0.0300)	(0.0300)	(0.0351)	(0.0351)	(0.0351)	(0.0443)	(0.0443)	(0.0443)	(0.0295)	(0.0295)	(0.0295)
Other qualifications	0.0003	0.0002	0.0001	0.0900*	0.0903*	0.0903*	-0.1788***	-0.1791***	-0.1790***	0.0204	0.0206	0.0206
	(0.0379)	(0.0379)	(0.0379)	(0.0435)	(0.0435)	(0.0435)	(0.0533)	(0.0533)	(0.0533)	(0.0372)	(0.0372)	(0.0372)
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.

Variable	ls_disab1	ls_disab2	ls_disab3	happy_disab1	happy_disab2	happy_disab3	anxious_disab1	anxious_disab2	anxious_disab3	worth_disab1	worth_disab2	worth_disab3
Educ_squared	0.0016	0.0016	0.0016	-0.0005	-0.0004	-0.0004	-0.0001	-0.0001	-0.0001	-0.0066***	-0.0067***	-0.0067***
	(0.0013)	(0.0013)	(0.0013)	(0.0015)	(0.0015)	(0.0015)	(0.0019)	(0.0019)	(0.0019)	(0.0013)	(0.0013)	(0.0013)
Age_left_FT_educ	-0.0061	-0.0061	-0.0061	0.0032	0.0033	0.0033	-0.0189	-0.0191	-0.0192	0.0008	0.0008	0.0007
	(0.0104)	(0.0104)	(0.0104)	(0.0128)	(0.0128)	(0.0128)	(0.0159)	(0.0158)	(0.0158)	(0.0105)	(0.0105)	(0.0105)
Age_left_educ_squared	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0005	0.0005	0.0006	0.0000	0.0000	0.0000
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.2388***	-0.2380***	-0.2381***	-0.1396***	-0.1386***	-0.1386***	0.1667***	0.1657***	0.1659***	-0.1293***	-0.1283***	-0.1283***
	(0.0287)	(0.0287)	(0.0287)	(0.0339)	(0.0339)	(0.0339)	(0.0438)	(0.0438)	(0.0438)	(0.0277)	(0.0277)	(0.0277)
Terraced	-0.3561*	-0.3508*	-0.3511*	-0.3340+	-0.3335+	-0.3336+	0.5126*	0.5146*	0.5155*	-0.2971*	-0.2938*	-0.2935*
	(0.1569)	(0.1571)	(0.1573)	(0.1978)	(0.1978)	(0.1978)	(0.2422)	(0.2422)	(0.2423)	(0.1417)	(0.1417)	(0.1417)
Flatmaisonette - purpose built	-0.3261***	-0.3248***	-0.3248***	-0.2752***	-0.2740***	-0.2740***	0.3268***	0.3257***	0.3258***	-0.1617***	-0.1606***	-0.1606***
	(0.0316)	(0.0316)	(0.0316)	(0.0373)	(0.0373)	(0.0373)	(0.0470)	(0.0470)	(0.0470)	(0.0313)	(0.0313)	(0.0313)
Flatmaiste - part hseconverted hse	-0.0779	-0.0776	-0.0774	-0.1828	-0.1821	-0.1820	0.1514	0.1508	0.1505	-0.0430	-0.0419	-0.0420
	(0.1348)	(0.1349)	(0.1349)	(0.1514)	(0.1513)	(0.1513)	(0.1854)	(0.1852)	(0.1851)	(0.1355)	(0.1355)	(0.1355)
Gypsy, Traveller/Irish Traveller	-0.3555	-0.3702	-0.3713	-0.5736	-0.5878	-0.5879	0.9312	0.9408	0.9430	-0.7377	-0.7482	-0.7473
	(0.5571)	(0.5604)	(0.5603)	(0.5760)	(0.5784)	(0.5784)	(0.6636)	(0.6629)	(0.6624)	(0.7023)	(0.7032)	(0.7029)
Mixed / Multiple ethnic groups	-0.1407	-0.1422	-0.1421	0.0164	0.0187	0.0187	0.1294	0.1259	0.1257	0.1092	0.1092	0.1091
	(0.1372)	(0.1373)	(0.1373)	(0.1518)	(0.1519)	(0.1519)	(0.2122)	(0.2123)	(0.2123)	(0.1415)	(0.1415)	(0.1415)
Indian	0.0925	0.0972	0.0973	0.0991	0.0996	0.0996	-0.1385	-0.1367	-0.1368	-0.0804	-0.0779	-0.0779
	(0.1312)	(0.1310)	(0.1310)	(0.1477)	(0.1478)	(0.1478)	(0.1974)	(0.1974)	(0.1974)	(0.1244)	(0.1245)	(0.1245)
Pakistani	0.0842	0.0848	0.0855	-0.1327	-0.1323	-0.1323	-0.0528	-0.0531	-0.0545	0.1263	0.1272	0.1267
	(0.1511)	(0.1512)	(0.1512)	(0.1757)	(0.1756)	(0.1756)	(0.2102)	(0.2101)	(0.2101)	(0.1399)	(0.1400)	(0.1400)
Bangladeshi	-0.1906	-0.1946	-0.1950	0.1646	0.1579	0.1579	-0.4188	-0.4123	-0.4114	-0.1318	-0.1369	-0.1366
	(0.2076)	(0.2078)	(0.2078)	(0.2463)	(0.2464)	(0.2464)	(0.2751)	(0.2749)	(0.2749)	(0.1869)	(0.1870)	(0.1870)
Chinese	0.0643	0.0716	0.0717	0.5518*	0.5565*	0.5565*	-0.5251	-0.5273	-0.5273	-0.3149	-0.3052	-0.3052
	(0.2219)	(0.2208)	(0.2209)	(0.2315)	(0.2308)	(0.2308)	(0.3288)	(0.3281)	(0.3278)	(0.2448)	(0.2434)	(0.2433)

Variable	ls_disab1	ls_disab2	ls_disab3	happy_disab1	happy_disab2	happy_disab3	anxious_disab1	anxious_disab2	anxious_disab3	worth_disab1	worth_disab2	worth_disab3
Any other Asian background	0.1002	0.0989	0.0987	0.0606	0.0590	0.0590	-0.3542	-0.3532	-0.3526	-0.0145	-0.0165	-0.0164
	(0.1351)	(0.1352)	(0.1352)	(0.2049)	(0.2045)	(0.2045)	(0.2363)	(0.2357)	(0.2358)	(0.1301)	(0.1301)	(0.1301)
Black/ African/Caribbean/Black British	-0.2341**	-0.2348**	-0.2357**	0.0759	0.0764	0.0762	-0.4300***	-0.4309***	-0.4290***	0.0282	0.0284	0.0291
	(0.0840)	(0.0841)	(0.0841)	(0.0984)	(0.0984)	(0.0984)	(0.1179)	(0.1179)	(0.1179)	(0.0814)	(0.0815)	(0.0815)
Arab	0.0720	0.0690	0.0676	-0.1634	-0.1645	-0.1647	-0.0869	-0.0870	-0.0839	-0.0646	-0.0688	-0.0677
	(0.2303)	(0.2306)	(0.2306)	(0.2848)	(0.2852)	(0.2853)	(0.3137)	(0.3140)	(0.3138)	(0.2387)	(0.2388)	(0.2389)
Other ethnic group	-0.3397**	-0.3389**	-0.3392**	-0.4320**	-0.4334**	-0.4334**	0.0105	0.0125	0.0133	-0.4343**	-0.4348**	-0.4345**
	(0.1245)	(0.1246)	(0.1246)	(0.1538)	(0.1539)	(0.1539)	(0.1917)	(0.1917)	(0.1917)	(0.1324)	(0.1326)	(0.1326)
Christian (all denominations)	0.1866***	0.1862***	0.1862***	0.2451***	0.2447***	0.2447***	0.0493	0.0496	0.0496	0.2297***	0.2296***	0.2296***
	(0.0255)	(0.0255)	(0.0255)	(0.0302)	(0.0302)	(0.0302)	(0.0375)	(0.0375)	(0.0375)	(0.0253)	(0.0253)	(0.0253)
Buddhist	-0.2144	-0.2175	-0.2186	0.0975	0.0993	0.0991	0.8633***	0.8594***	0.8619***	0.1619	0.1600	0.1610
	(0.1940)	(0.1940)	(0.1942)	(0.1984)	(0.1983)	(0.1983)	(0.2324)	(0.2320)	(0.2322)	(0.1918)	(0.1916)	(0.1914)
Hindu	0.0279	0.0225	0.0226	0.2552	0.2573	0.2573	0.6326**	0.6278**	0.6276**	0.2224	0.2213	0.2212
	(0.1547)	(0.1544)	(0.1544)	(0.1730)	(0.1730)	(0.1730)	(0.2318)	(0.2319)	(0.2318)	(0.1406)	(0.1406)	(0.1406)
Jewish	-0.3508*	-0.3537*	-0.3528*	-0.1450	-0.1483	-0.1482	0.4460+	0.4488+	0.4471+	-0.2709	-0.2751+	-0.2757+
	(0.1766)	(0.1764)	(0.1764)	(0.2096)	(0.2097)	(0.2097)	(0.2406)	(0.2406)	(0.2405)	(0.1649)	(0.1643)	(0.1644)
Muslim	0.3635***	0.3623***	0.3623***	0.2758*	0.2762*	0.2762*	0.1308	0.1297	0.1296	0.2522*	0.2518*	0.2517*
	(0.1097)	(0.1097)	(0.1097)	(0.1300)	(0.1299)	(0.1299)	(0.1583)	(0.1583)	(0.1583)	(0.1073)	(0.1073)	(0.1073)
Sikh	-0.3406	-0.3425+	-0.3422+	-0.2167	-0.2155	-0.2154	0.7878**	0.7854**	0.7847**	-0.0181	-0.0187	-0.0190
	(0.2075)	(0.2073)	(0.2073)	(0.2265)	(0.2263)	(0.2263)	(0.2760)	(0.2758)	(0.2758)	(0.1909)	(0.1908)	(0.1908)
Any other religion	-0.1272	-0.1277	-0.1278	0.1331	0.1329	0.1328	0.4078***	0.4079***	0.4082***	0.1400+	0.1398+	0.1399+
	(0.0821)	(0.0820)	(0.0820)	(0.0858)	(0.0858)	(0.0858)	(0.1093)	(0.1093)	(0.1093)	(0.0801)	(0.0800)	(0.0800)
Employed	0.4193***	0.4194***	0.4194***	0.1840***	0.1837***	0.1837***	-0.2114***	-0.2110***	-0.2110***	0.2581***	0.2582***	0.2581***
	(0.0353)	(0.0354)	(0.0354)	(0.0416)	(0.0416)	(0.0416)	(0.0525)	(0.0525)	(0.0525)	(0.0345)	(0.0346)	(0.0346)
Self-employed	0.3616***	0.3628***	0.3627***	0.1673**	0.1679**	0.1679**	-0.0939	-0.0942	-0.0940	0.3827***	0.3837***	0.3837***
	(0.0465)	(0.0465)	(0.0465)	(0.0545)	(0.0545)	(0.0545)	(0.0703)	(0.0703)	(0.0703)	(0.0449)	(0.0449)	(0.0449)

Variable	ls_disab1	ls_disab2	ls_disab3	happy_disab1	happy_disab2	happy_disab3	anxious_disab1	anxious_disab2	anxious_disab3	worth_disab1	worth_disab2	worth_disab3
Gov. employed training	-0.0799	-0.0715	-0.0701	0.2015	0.2041	0.2043	-0.0803	-0.0809	-0.0841	-0.3411+	-0.3377+	-0.3389+
	(0.1816)	(0.1821)	(0.1822)	(0.2319)	(0.2319)	(0.2319)	(0.2655)	(0.2654)	(0.2657)	(0.1766)	(0.1763)	(0.1763)
Student	0.3808**	0.3819**	0.3829**	0.2036	0.2025	0.2027	0.1531	0.1557	0.1535	0.2429+	0.2437+	0.2428+
	(0.1285)	(0.1287)	(0.1286)	(0.1664)	(0.1664)	(0.1664)	(0.2036)	(0.2034)	(0.2034)	(0.1380)	(0.1382)	(0.1382)
Retired	0.5234***	0.5246***	0.5247***	0.3651***	0.3656***	0.3656***	-0.4053***	-0.4053***	-0.4056***	0.1164**	0.1170**	0.1169**
	(0.0414)	(0.0414)	(0.0414)	(0.0480)	(0.0480)	(0.0480)	(0.0619)	(0.0619)	(0.0619)	(0.0407)	(0.0407)	(0.0407)
Disabled, not working	-0.6110***	-0.6110***	-0.6106***	-0.6625***	-0.6628***	-0.6628***	0.7271***	0.7275***	0.7266***	-0.8719***	-0.8718***	-0.8722***
	(0.0403)	(0.0403)	(0.0403)	(0.0456)	(0.0456)	(0.0456)	(0.0551)	(0.0551)	(0.0551)	(0.0404)	(0.0404)	(0.0405)
Length of time at address:												
12 mths but less than 2 years	-0.0081	-0.0079	-0.0082	-0.0343	-0.0350	-0.0350	-0.1036	-0.1025	-0.1019	-0.0491	-0.0492	-0.0490
	(0.0590)	(0.0591)	(0.0591)	(0.0705)	(0.0705)	(0.0705)	(0.0872)	(0.0871)	(0.0871)	(0.0593)	(0.0593)	(0.0593)
2 years but less than 3 years	-0.0301	-0.0293	-0.0295	0.0050	0.0050	0.0050	-0.1681+	-0.1677+	-0.1673+	-0.0303	-0.0298	-0.0297
	(0.0609)	(0.0609)	(0.0609)	(0.0740)	(0.0740)	(0.0740)	(0.0912)	(0.0911)	(0.0911)	(0.0619)	(0.0620)	(0.0620)
3 years but less than 5 years	-0.0012	0.0006	0.0005	-0.0870	-0.0862	-0.0862	-0.1000	-0.1003	-0.1001	0.0055	0.0064	0.0065
	(0.0543)	(0.0543)	(0.0543)	(0.0640)	(0.0640)	(0.0640)	(0.0792)	(0.0792)	(0.0792)	(0.0548)	(0.0548)	(0.0548)
5 years but less than 10 years	-0.0602	-0.0589	-0.0590	-0.0703	-0.0699	-0.0699	-0.0078	-0.0076	-0.0074	-0.0298	-0.0290	-0.0289
	(0.0492)	(0.0492)	(0.0492)	(0.0582)	(0.0582)	(0.0582)	(0.0722)	(0.0722)	(0.0722)	(0.0498)	(0.0498)	(0.0498)
10 years or longer	-0.0953*	-0.0935+	-0.0936+	-0.1100+	-0.1097+	-0.1097+	-0.0194	-0.0190	-0.0187	-0.0329	-0.0321	-0.0319
	(0.0478)	(0.0478)	(0.0478)	(0.0564)	(0.0564)	(0.0564)	(0.0690)	(0.0689)	(0.0689)	(0.0481)	(0.0481)	(0.0481)
Ex-smoker	0.4322***	0.4326***	0.4324***	0.3937***	0.3943***	0.3943***	-0.3497***	-0.3503***	-0.3500***	0.3482***	0.3485***	0.3486***
	(0.0291)	(0.0291)	(0.0291)	(0.0343)	(0.0343)	(0.0343)	(0.0424)	(0.0424)	(0.0424)	(0.0292)	(0.0292)	(0.0292)
Never smoked	0.5283***	0.5283***	0.5280***	0.4900***	0.4904***	0.4904***	-0.3501***	-0.3508***	-0.3501***	0.4149***	0.4149***	0.4151***
	(0.0300)	(0.0300)	(0.0300)	(0.0353)	(0.0353)	(0.0353)	(0.0429)	(0.0429)	(0.0429)	(0.0298)	(0.0299)	(0.0299)
Diff. reg wage	0.0096			0.0117			-0.0125			-0.0002		
	(0.0088)			(0.0104)			(0.0131)			(0.0088)		
Log regional unem	-0.7685*			-0.2568			0.0200			-0.6235+		
	(0.3342)			(0.3965)			(0.4935)			(0.3274)		

Variable	ls_disab1	ls_disab2	ls_disab3	happy_disab1	happy_disab2	happy_disab3	anxious_disab1	anxious_disab2	anxious_disab3	worth_disab1	worth_disab2	worth_disab3
Face-to-face interview	-0.1822***	-0.1776***	-0.1777***	-0.1179***	-0.1161***	-0.1161***	0.0174	0.0168	0.0170	-0.1941***	-0.1928***	-0.1927***
	(0.0228)	(0.0228)	(0.0228)	(0.0273)	(0.0273)	(0.0273)	(0.0345)	(0.0345)	(0.0345)	(0.0221)	(0.0221)	(0.0221)
North West	-0.1661*	-0.0590	.	-0.0074	-0.0898	.	-0.0256	0.1348	.	-0.0978	-0.0696	.
	(0.0847)	(0.0965)	.	(0.1000)	(0.1146)	.	(0.1245)	(0.1424)	.	(0.0841)	(0.0957)	.
Yorkshire and The Humber	-0.0467	0.0107	0.0108	0.0453	-0.0236	-0.0236	-0.0032	0.1138	0.1136	-0.0558	-0.0542	-0.0543
	(0.0699)	(0.0788)	(0.0788)	(0.0826)	(0.0935)	(0.0935)	(0.1031)	(0.1169)	(0.1169)	(0.0688)	(0.0778)	(0.0778)
East Midlands	-0.2098+	-0.0545	-0.0544	0.0532	-0.0448	-0.0448	-0.0330	0.1664	0.1660	-0.1476	-0.1064	-0.1066
	(0.1120)	(0.1203)	(0.1203)	(0.1321)	(0.1425)	(0.1425)	(0.1647)	(0.1781)	(0.1780)	(0.1100)	(0.1186)	(0.1186)
West Midlands	-0.2085**	-0.1541+	-0.1542+	-0.0593	-0.1522	-0.1522	-0.2518*	-0.1062	-0.1060	-0.2120**	-0.2228*	-0.2228*
	(0.0771)	(0.0891)	(0.0891)	(0.0915)	(0.1063)	(0.1063)	(0.1142)	(0.1333)	(0.1333)	(0.0754)	(0.0876)	(0.0876)
East of England	-0.3929*	-0.1604	-0.1599	0.0003	-0.0393	-0.0393	-0.0550	0.0797	0.0786	-0.2976+	-0.1731+	-0.1735+
	(0.1645)	(0.0980)	(0.0980)	(0.1938)	(0.1160)	(0.1160)	(0.2407)	(0.1467)	(0.1467)	(0.1620)	(0.0975)	(0.0975)
London	-0.0440	0.3830	0.3837	0.0529	0.3261	0.3262	0.1382	0.0333	0.0317	-0.0786	0.3583	0.3577
	(0.0664)	(0.2459)	(0.2459)	(0.0789)	(0.2868)	(0.2867)	(0.0976)	(0.3605)	(0.3605)	(0.0660)	(0.2500)	(0.2500)
South East	-0.4001*	0.0231	0.0239	-0.1204	-0.0041	-0.0040	0.0204	0.0522	0.0505	-0.3211+	0.0182	0.0175
	(0.1861)	(0.0611)	(0.0611)	(0.2203)	(0.0724)	(0.0724)	(0.2738)	(0.0909)	(0.0909)	(0.1831)	(0.0614)	(0.0614)
South West	-0.4238*	-0.1329	-0.1325	-0.0898	-0.0855	-0.0855	-0.0764	0.0219	0.0211	-0.3332+	-0.1455	-0.1458
	(0.1888)	(0.0899)	(0.0899)	(0.2220)	(0.1058)	(0.1058)	(0.2749)	(0.1333)	(0.1333)	(0.1851)	(0.0904)	(0.0904)
Wales	-0.1092	0.0824	0.0822	0.0533	0.0261	0.0261	-0.0686	0.0662	0.0665	-0.0222	0.0811	0.0812
	(0.0907)	(0.1081)	(0.1081)	(0.1072)	(0.1277)	(0.1277)	(0.1328)	(0.1576)	(0.1576)	(0.0896)	(0.1080)	(0.1080)
Scotland	-0.0779	-0.0363	-0.0364	0.0177	-0.1771	-0.1772	-0.1317	0.1223	0.1227	-0.1677	-0.2609+	-0.2608+
	(0.1114)	(0.1524)	(0.1524)	(0.1319)	(0.1812)	(0.1812)	(0.1632)	(0.2271)	(0.2271)	(0.1099)	(0.1517)	(0.1517)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Spring	0.0172	0.0196	0.0196	0.0927*	0.0936*	0.0936*	0.0299	0.0297	0.0298	0.0377	0.0386	0.0386
	(0.0320)	(0.0320)	(0.0320)	(0.0375)	(0.0375)	(0.0375)	(0.0470)	(0.0470)	(0.0470)	(0.0314)	(0.0315)	(0.0315)

Variable	ls_disab1	ls_disab2	ls_disab3	happy_disab1	happy_disab2	happy_disab3	anxious_disab1	anxious_disab2	anxious_disab3	worth_disab1	worth_disab2	worth_disab3
Summer	0.0542+	0.0545+	0.0545+	0.0991**	0.0995**	0.0995**	0.0035	0.0029	0.0029	0.0738*	0.0738*	0.0738*
	(0.0314)	(0.0314)	(0.0314)	(0.0365)	(0.0365)	(0.0365)	(0.0457)	(0.0457)	(0.0457)	(0.0309)	(0.0309)	(0.0309)
Autumn	0.0082	0.0083	0.0083	-0.0146	-0.0146	-0.0146	0.1259**	0.1259**	0.1259**	0.0494	0.0492	0.0492
	(0.0313)	(0.0313)	(0.0313)	(0.0366)	(0.0366)	(0.0366)	(0.0457)	(0.0457)	(0.0457)	(0.0310)	(0.0310)	(0.0310)
Wage_st_dev		-0.0084	-0.0084		-0.0072	-0.0072		0.0044	0.0044		-0.0094+	-0.0094+
		(0.0053)	(0.0053)		(0.0062)	(0.0062)		(0.0079)	(0.0079)		(0.0054)	(0.0054)
Unemp_st_dev		0.0373	0.0371		-0.0379	-0.0379		0.0812	0.0815		-0.0065	-0.0064
		(0.0692)	(0.0692)		(0.0820)	(0.0820)		(0.1018)	(0.1018)		(0.0689)	(0.0689)
First regions			-0.0197			-0.0838			0.0482			-0.1022
			(0.1035)			(0.1259)			(0.1569)			(0.1036)
*First regions*benefits*			-0.0583			-0.0089			0.1286			0.0485
			(0.0624)			(0.0777)			(0.0968)			(0.0637)
Constant	10.2768***	8.7006***	8.6953***	8.5694***	8.2951***	8.2943***	1.9064	1.6435***	1.6554***	9.2679***	8.1362***	8.1407***
	(0.8101)	(0.2505)	(0.2506)	(0.9641)	(0.2951)	(0.2952)	(1.1989)	(0.3721)	(0.3721)	(0.8001)	(0.2565)	(0.2566)
Observations	55705	55705	55705	55690	55690	55690	55624	55624	55624	55493	55493	55493
R-squared	0.16	0.16	0.16	0.093	0.093	0.093	0.050	0.050	0.050	0.13	0.13	0.13
ll	-1.20e+05	-1.20e+05	-1.20e+05	-1.29e+05	-1.29e+05	-1.29e+05	-1.41e+05	-1.41e+05	-1.41e+05	-1.18e+05	-1.18e+05	-1.18e+05

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.2.2 Self-assessed health in disabled population (PPO) (complete results)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
PIP	-0.0706	-0.1218	-0.1206	-0.1318+	-0.1829**	-0.1835**	-0.0161	-0.0668	-0.0671	-0.0637	-0.1145	-0.1145
	(0.1776)	(0.1752)	(0.1749)	(0.0744)	(0.0693)	(0.0692)	(0.0545)	(0.0467)	(0.0467)	(0.0839)	(0.0787)	(0.0787)
Benefits	-0.5183***	-0.5173***	-0.5212***	-0.5019***	-0.5008***	-0.4908***	-0.2332***	-0.2325***	-0.2194***	-0.0575	-0.0569	-0.0424
	(0.1014)	(0.1014)	(0.1065)	(0.0437)	(0.0437)	(0.0455)	(0.0302)	(0.0302)	(0.0315)	(0.0518)	(0.0518)	(0.0539)
*PIP*Benefits*	0.0182	0.0155	0.0143	0.0882	0.0854	0.0862	0.0046	0.0021	0.0028	0.0356	0.0332	0.0339
	(0.1837)	(0.1836)	(0.1833)	(0.0766)	(0.0766)	(0.0765)	(0.0579)	(0.0579)	(0.0579)	(0.1063)	(0.1064)	(0.1064)
Married	0.0556**	0.0556**	0.0554**	0.0556**	0.0556**	0.0554**	0.0556**	0.0556**	0.0554**	0.0556**	0.0556**	0.0554**
	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)	(0.0212)
Female	0.0635	0.0634	0.0634	0.0846**	0.0844**	0.0843**	0.0212	0.0209	0.0208	-0.0841+	-0.0842+	-0.0845+
	(0.0465)	(0.0465)	(0.0465)	(0.0280)	(0.0280)	(0.0280)	(0.0250)	(0.0250)	(0.0250)	(0.0454)	(0.0454)	(0.0454)
Age	-0.0555**	-0.0554**	-0.0554**	-0.0801***	-0.0800***	-0.0800***	-0.0743***	-0.0742***	-0.0741***	-0.0592***	-0.0592***	-0.0590***
	(0.0173)	(0.0173)	(0.0173)	(0.0091)	(0.0091)	(0.0091)	(0.0071)	(0.0071)	(0.0071)	(0.0112)	(0.0112)	(0.0112)
Age squared	0.0005**	0.0005**	0.0005**	0.0008***	0.0008***	0.0008***	0.0006***	0.0006***	0.0006***	0.0005***	0.0005***	0.0005***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.2107*	-0.2104*	-0.2104*	-0.1338*	-0.1337*	-0.1340*	-0.0182	-0.0181	-0.0187	-0.0056	-0.0052	-0.0059
	(0.0977)	(0.0977)	(0.0977)	(0.0559)	(0.0558)	(0.0558)	(0.0428)	(0.0428)	(0.0428)	(0.0681)	(0.0681)	(0.0680)
GCE, A-level or equivalent	-0.2145**	-0.2141**	-0.2142**	-0.1698***	-0.1695***	-0.1694***	-0.0748*	-0.0745*	-0.0745*	-0.2005***	-0.2001***	-0.1994***
	(0.0699)	(0.0699)	(0.0699)	(0.0426)	(0.0426)	(0.0426)	(0.0351)	(0.0351)	(0.0351)	(0.0605)	(0.0605)	(0.0605)
GCSE grades A-C or equivalent*	-0.0983	-0.0986	-0.0986	-0.0267	-0.0270	-0.0272	-0.0020	-0.0019	-0.0023	-0.1858**	-0.1854**	-0.1856**
	(0.0647)	(0.0647)	(0.0647)	(0.0388)	(0.0388)	(0.0388)	(0.0327)	(0.0327)	(0.0327)	(0.0588)	(0.0588)	(0.0588)
Other qualifications	0.0572	0.0568	0.0567	0.0744+	0.0743+	0.0743+	0.0572	0.0578	0.0579	-0.0691	-0.0682	-0.0675
	(0.0718)	(0.0718)	(0.0718)	(0.0429)	(0.0429)	(0.0429)	(0.0403)	(0.0403)	(0.0403)	(0.0825)	(0.0825)	(0.0825)
Educ_squared	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***	-0.0095***
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
Age_left_FT_educ	0.0168	0.0168	0.0169	0.0203*	0.0204*	0.0205*	0.0325***	0.0326***	0.0328***	0.0200+	0.0201+	0.0203+

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
	(0.0113)	(0.0113)	(0.0113)	(0.0100)	(0.0100)	(0.0100)	(0.0098)	(0.0098)	(0.0098)	(0.0108)	(0.0108)	(0.0107)
Age_left_educ_squared	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.1691***	-0.1696***	-0.1697***	-0.1691***	-0.1696***	-0.1697***	-0.1691***	-0.1696***	-0.1697***	-0.1691***	-0.1696***	-0.1697***
	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0278)
Terraced	-0.5187***	-0.5180***	-0.5186***	-0.5187***	-0.5180***	-0.5186***	-0.5187***	-0.5180***	-0.5186***	-0.5187***	-0.5180***	-0.5186***
	(0.1502)	(0.1500)	(0.1495)	(0.1502)	(0.1500)	(0.1495)	(0.1502)	(0.1500)	(0.1495)	(0.1502)	(0.1500)	(0.1495)
Flatmaisonette - purpose built	-0.3841***	-0.3849***	-0.3848***	-0.3841***	-0.3849***	-0.3848***	-0.3841***	-0.3849***	-0.3848***	-0.3841***	-0.3849***	-0.3848***
	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)	(0.0291)
Flatmaiste - part hseconverted hse	-0.5817***	-0.5812***	-0.5813***	-0.5817***	-0.5812***	-0.5813***	-0.5817***	-0.5812***	-0.5813***	-0.5817***	-0.5812***	-0.5813***
	(0.1181)	(0.1181)	(0.1180)	(0.1181)	(0.1181)	(0.1180)	(0.1181)	(0.1181)	(0.1180)	(0.1181)	(0.1181)	(0.1180)
Gypsy, Traveller/Irish Traveller	0.1223	0.1285	0.1266	0.1223	0.1285	0.1266	0.1223	0.1285	0.1266	0.1223	0.1285	0.1266
	(0.3426)	(0.3396)	(0.3386)	(0.3426)	(0.3396)	(0.3386)	(0.3426)	(0.3396)	(0.3386)	(0.3426)	(0.3396)	(0.3386)
Mixed / Multiple ethnic groups	-0.1309	-0.1311	-0.1313	-0.1309	-0.1311	-0.1313	-0.1309	-0.1311	-0.1313	-0.1309	-0.1311	-0.1313
	(0.1122)	(0.1123)	(0.1122)	(0.1122)	(0.1123)	(0.1122)	(0.1122)	(0.1123)	(0.1122)	(0.1122)	(0.1123)	(0.1122)
Indian	-0.2575*	-0.2583*	-0.2583*	-0.2575*	-0.2583*	-0.2583*	-0.2575*	-0.2583*	-0.2583*	-0.2575*	-0.2583*	-0.2583*
	(0.1192)	(0.1193)	(0.1193)	(0.1192)	(0.1193)	(0.1193)	(0.1192)	(0.1193)	(0.1193)	(0.1192)	(0.1193)	(0.1193)
Pakistani	-0.2681*	-0.2675*	-0.2669*	-0.2681*	-0.2675*	-0.2669*	-0.2681*	-0.2675*	-0.2669*	-0.2681*	-0.2675*	-0.2669*
	(0.1251)	(0.1252)	(0.1253)	(0.1251)	(0.1252)	(0.1253)	(0.1251)	(0.1252)	(0.1253)	(0.1251)	(0.1252)	(0.1253)
Bangladeshi	-0.1572	-0.1554	-0.1564	-0.1572	-0.1554	-0.1564	-0.1572	-0.1554	-0.1564	-0.1572	-0.1554	-0.1564
	(0.1647)	(0.1646)	(0.1644)	(0.1647)	(0.1646)	(0.1644)	(0.1647)	(0.1646)	(0.1644)	(0.1647)	(0.1646)	(0.1644)
Chinese	-0.1630	-0.1630	-0.1631	-0.1630	-0.1630	-0.1631	-0.1630	-0.1630	-0.1631	-0.1630	-0.1630	-0.1631
	(0.2231)	(0.2222)	(0.2220)	(0.2231)	(0.2222)	(0.2220)	(0.2231)	(0.2222)	(0.2220)	(0.2231)	(0.2222)	(0.2220)
Any other Asian background	-0.3812**	-0.3808**	-0.3818**	-0.3812**	-0.3808**	-0.3818**	-0.3812**	-0.3808**	-0.3818**	-0.3812**	-0.3808**	-0.3818**
	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)	(0.1367)
Black/ African/Caribbean/Black British	-0.1228+	-0.1220+	-0.1237+	-0.1228+	-0.1220+	-0.1237+	-0.1228+	-0.1220+	-0.1237+	-0.1228+	-0.1220+	-0.1237+

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
	(0.0696)	(0.0695)	(0.0695)	(0.0696)	(0.0695)	(0.0695)	(0.0696)	(0.0695)	(0.0695)	(0.0696)	(0.0695)	(0.0695)
Arab	0.0760	0.0754	0.0737	0.0760	0.0754	0.0737	0.0760	0.0754	0.0737	0.0760	0.0754	0.0737
	(0.2123)	(0.2125)	(0.2124)	(0.2123)	(0.2125)	(0.2124)	(0.2123)	(0.2125)	(0.2124)	(0.2123)	(0.2125)	(0.2124)
Other ethnic group	-0.1586	-0.1585	-0.1591	-0.1586	-0.1585	-0.1591	-0.1586	-0.1585	-0.1591	-0.1586	-0.1585	-0.1591
	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)	(0.1065)
Christian (all denominations)	0.0074	0.0078	0.0079	0.0074	0.0078	0.0079	0.0074	0.0078	0.0079	0.0074	0.0078	0.0079
	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)
Buddhist	-0.0840	-0.0847	-0.0861	-0.0840	-0.0847	-0.0861	-0.0840	-0.0847	-0.0861	-0.0840	-0.0847	-0.0861
	(0.1804)	(0.1804)	(0.1805)	(0.1804)	(0.1804)	(0.1805)	(0.1804)	(0.1804)	(0.1805)	(0.1804)	(0.1804)	(0.1805)
Hindu	-0.1622	-0.1605	-0.1602	-0.1622	-0.1605	-0.1602	-0.1622	-0.1605	-0.1602	-0.1622	-0.1605	-0.1602
	(0.1413)	(0.1412)	(0.1412)	(0.1413)	(0.1412)	(0.1412)	(0.1413)	(0.1412)	(0.1412)	(0.1413)	(0.1412)	(0.1412)
Jewish	-0.4009*	-0.3997*	-0.3982*	-0.4009*	-0.3997*	-0.3982*	-0.4009*	-0.3997*	-0.3982*	-0.4009*	-0.3997*	-0.3982*
	(0.1582)	(0.1583)	(0.1583)	(0.1582)	(0.1583)	(0.1583)	(0.1582)	(0.1583)	(0.1583)	(0.1582)	(0.1583)	(0.1583)
Muslim	-0.2779**	-0.2777**	-0.2770**	-0.2779**	-0.2777**	-0.2770**	-0.2779**	-0.2777**	-0.2770**	-0.2779**	-0.2777**	-0.2770**
	(0.0906)	(0.0907)	(0.0907)	(0.0906)	(0.0907)	(0.0907)	(0.0906)	(0.0907)	(0.0907)	(0.0906)	(0.0907)	(0.0907)
Sikh	-0.3158+	-0.3151+	-0.3149+	-0.3158+	-0.3151+	-0.3149+	-0.3158+	-0.3151+	-0.3149+	-0.3158+	-0.3151+	-0.3149+
	(0.1769)	(0.1768)	(0.1768)	(0.1769)	(0.1768)	(0.1768)	(0.1769)	(0.1768)	(0.1768)	(0.1769)	(0.1768)	(0.1768)
Any other religion	-0.2868***	-0.2859***	-0.2859***	-0.2868***	-0.2859***	-0.2859***	-0.2868***	-0.2859***	-0.2859***	-0.2868***	-0.2859***	-0.2859***
	(0.0674)	(0.0673)	(0.0673)	(0.0674)	(0.0673)	(0.0673)	(0.0674)	(0.0673)	(0.0673)	(0.0674)	(0.0673)	(0.0673)
Employed	0.2797*	0.2805*	0.2800*	0.3145***	0.3153***	0.3155***	0.2961***	0.2965***	0.2964***	0.2384***	0.2384***	0.2383***
	(0.1290)	(0.1290)	(0.1290)	(0.0499)	(0.0499)	(0.0499)	(0.0352)	(0.0352)	(0.0352)	(0.0650)	(0.0650)	(0.0650)
Self-employed	0.0248	0.0244	0.0250	0.2113**	0.2109**	0.2107**	0.3296***	0.3291***	0.3286***	0.3586***	0.3579***	0.3576***
	(0.1748)	(0.1748)	(0.1748)	(0.0725)	(0.0725)	(0.0725)	(0.0483)	(0.0483)	(0.0483)	(0.0862)	(0.0862)	(0.0863)
Gov. employed training	-0.5776	-0.5800	-0.5800	-0.0180	-0.0218	-0.0199	0.0723	0.0670	0.0707	-0.0122	-0.0188	-0.0149
	(0.3859)	(0.3859)	(0.3860)	(0.2129)	(0.2123)	(0.2124)	(0.2073)	(0.2071)	(0.2075)	(0.4792)	(0.4783)	(0.4781)
Student	-0.4971	-0.4947	-0.4978	-0.1479	-0.1444	-0.1432	0.3018*	0.3045*	0.3063*	0.4048+	0.4069+	0.4091+

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
	(0.4365)	(0.4368)	(0.4370)	(0.2194)	(0.2196)	(0.2195)	(0.1407)	(0.1406)	(0.1405)	(0.2114)	(0.2113)	(0.2113)
Retired	-0.6499***	-0.6496***	-0.6500***	-0.3155***	-0.3153***	-0.3152***	-0.0372	-0.0372	-0.0369	0.0018	0.0012	0.0015
	(0.1245)	(0.1245)	(0.1245)	(0.0543)	(0.0543)	(0.0543)	(0.0432)	(0.0432)	(0.0432)	(0.0829)	(0.0830)	(0.0829)
Disabled, not working	-2.0295***	-2.0290***	-2.0292***	-1.8893***	-1.8888***	-1.8884***	-1.6859***	-1.6854***	-1.6844***	-1.6659***	-1.6657***	-1.6645***
	(0.0967)	(0.0967)	(0.0967)	(0.0424)	(0.0424)	(0.0425)	(0.0482)	(0.0482)	(0.0482)	(0.1179)	(0.1179)	(0.1180)
Length of time at address:												
12 mths but less than 2 years	-0.0931+	-0.0927+	-0.0932+	-0.0931+	-0.0927+	-0.0932+	-0.0931+	-0.0927+	-0.0932+	-0.0931+	-0.0927+	-0.0932+
	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)	(0.0528)
2 years but less than 3 years	-0.0637	-0.0634	-0.0640	-0.0637	-0.0634	-0.0640	-0.0637	-0.0634	-0.0640	-0.0637	-0.0634	-0.0640
	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)	(0.0557)
3 years but less than 5 years	-0.0608	-0.0617	-0.0617	-0.0608	-0.0617	-0.0617	-0.0608	-0.0617	-0.0617	-0.0608	-0.0617	-0.0617
	(0.0480)	(0.0479)	(0.0480)	(0.0480)	(0.0479)	(0.0480)	(0.0480)	(0.0479)	(0.0480)	(0.0480)	(0.0479)	(0.0480)
5 years but less than 10 years	-0.0973*	-0.0979*	-0.0982*	-0.0973*	-0.0979*	-0.0982*	-0.0973*	-0.0979*	-0.0982*	-0.0973*	-0.0979*	-0.0982*
	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)	(0.0445)
10 years or longer	-0.1462***	-0.1469***	-0.1469***	-0.1462***	-0.1469***	-0.1469***	-0.1462***	-0.1469***	-0.1469***	-0.1462***	-0.1469***	-0.1469***
	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)	(0.0429)
Ex-smoker	0.2404***	0.2400***	0.2399***	0.2404***	0.2400***	0.2399***	0.2404***	0.2400***	0.2399***	0.2404***	0.2400***	0.2399***
	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)
Never smoked	0.3344***	0.3340***	0.3335***	0.3344***	0.3340***	0.3335***	0.3344***	0.3340***	0.3335***	0.3344***	0.3340***	0.3335***
	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)	(0.0264)
Diff. reg wage	-0.0127			-0.0127			-0.0127			-0.0127		
	(0.0079)			(0.0079)			(0.0079)			(0.0079)		
Log regional unem	0.3527			0.3527			0.3527			0.3527		
	(0.3058)			(0.3058)			(0.3058)			(0.3058)		
Face-to-face interview	-0.0694	-0.0728	-0.0732	-0.1824***	-0.1854***	-0.1854***	-0.2924***	-0.2953***	-0.2955***	-0.3698***	-0.3726***	-0.3729***
	(0.0506)	(0.0506)	(0.0507)	(0.0296)	(0.0296)	(0.0296)	(0.0250)	(0.0250)	(0.0250)	(0.0446)	(0.0446)	(0.0446)
North West	0.2760*	0.2943*		0.1196	0.1388		0.2177**	0.2377*		0.1159	0.1369	

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
	(0.1136)	(0.1217)		(0.0847)	(0.0953)		(0.0829)	(0.0934)		(0.1257)	(0.1330)	
Yorkshire and The Humber	0.1857	0.1997+	0.1994+	0.2137**	0.2275**	0.2274**	0.2365***	0.2502**	0.2501**	0.2502*	0.2641*	0.2642*
	(0.1145)	(0.1194)	(0.1194)	(0.0754)	(0.0829)	(0.0828)	(0.0709)	(0.0787)	(0.0786)	(0.1175)	(0.1227)	(0.1227)
East Midlands	0.2099	0.2112	0.2107	0.2037+	0.2049+	0.2050+	0.1618	0.1631	0.1633	0.0674	0.0688	0.0690
	(0.1472)	(0.1528)	(0.1528)	(0.1117)	(0.1188)	(0.1187)	(0.1070)	(0.1150)	(0.1149)	(0.1476)	(0.1551)	(0.1550)
West Midlands	0.1394	0.1562	0.1557	0.1893*	0.2063*	0.2061*	0.1264	0.1438	0.1435	-0.0240	-0.0062	-0.0064
	(0.1241)	(0.1308)	(0.1307)	(0.0824)	(0.0926)	(0.0925)	(0.0781)	(0.0886)	(0.0885)	(0.1318)	(0.1382)	(0.1382)
East of England	0.2790	0.1632	0.1625	0.2510	0.1352	0.1357	0.3529*	0.2373*	0.2376*	0.2382	0.1228	0.1232
	(0.1854)	(0.1418)	(0.1418)	(0.1577)	(0.1019)	(0.1018)	(0.1532)	(0.0955)	(0.0954)	(0.1831)	(0.1391)	(0.1391)
London	0.2515*	0.2938	0.2948	0.2663***	0.3082	0.3097	0.2448***	0.2866	0.2882	0.1041	0.1457	0.1475
	(0.1105)	(0.2381)	(0.2381)	(0.0737)	(0.2233)	(0.2233)	(0.0679)	(0.2215)	(0.2215)	(0.1208)	(0.2415)	(0.2415)
South East	0.4090*	0.2609*	0.2608*	0.3222+	0.1737*	0.1748*	0.4156*	0.2663***	0.2675***	0.3554+	0.2051+	0.2063+
	(0.1965)	(0.1131)	(0.1131)	(0.1750)	(0.0691)	(0.0691)	(0.1725)	(0.0638)	(0.0637)	(0.1937)	(0.1112)	(0.1112)
South West	0.3446+	0.1834	0.1830	0.2872	0.1269	0.1272	0.4061*	0.2458**	0.2459**	0.3422+	0.1814	0.1816
	(0.1981)	(0.1295)	(0.1295)	(0.1762)	(0.0924)	(0.0923)	(0.1729)	(0.0875)	(0.0874)	(0.1969)	(0.1325)	(0.1325)
Wales	0.2779*	0.2919*	0.2917*	0.2520**	0.2659*	0.2656*	0.2654**	0.2790**	0.2787**	0.3432**	0.3571**	0.3570**
	(0.1209)	(0.1319)	(0.1319)	(0.0909)	(0.1055)	(0.1055)	(0.0877)	(0.1026)	(0.1026)	(0.1261)	(0.1369)	(0.1369)
Scotland	0.2968*	0.2762+	0.2753+	0.2292*	0.2089	0.2083	0.3197**	0.3000*	0.2995*	0.4013**	0.3824*	0.3823*
	(0.1325)	(0.1625)	(0.1624)	(0.1076)	(0.1431)	(0.1430)	(0.1054)	(0.1420)	(0.1419)	(0.1389)	(0.1688)	(0.1687)
Northern Ireland	-0.0564+	-0.0577*	-0.0578*	-0.0564+	-0.0577*	-0.0578*	-0.0564+	-0.0577*	-0.0578*	-0.0564+	-0.0577*	-0.0578*
	(0.0291)	(0.0290)	(0.0290)	(0.0291)	(0.0290)	(0.0290)	(0.0291)	(0.0290)	(0.0290)	(0.0291)	(0.0290)	(0.0290)
Spring	0.0268	0.0262	0.0260	0.0268	0.0262	0.0260	0.0268	0.0262	0.0260	0.0268	0.0262	0.0260
	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)	(0.0283)
Summer	-0.0181	-0.0184	-0.0186	-0.0181	-0.0184	-0.0186	-0.0181	-0.0184	-0.0186	-0.0181	-0.0184	-0.0186
	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)	(0.0286)
Autumn		-0.0005	-0.0005		-0.0005	-0.0005		-0.0005	-0.0005		-0.0005	-0.0005

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
		(0.0048)	(0.0048)		(0.0048)	(0.0048)		(0.0048)	(0.0048)		(0.0048)	(0.0048)
Wage_st_dev		0.0560	0.0559		0.0560	0.0559		0.0560	0.0559		0.0560	0.0559
		(0.0631)	(0.0630)		(0.0631)	(0.0630)		(0.0631)	(0.0630)		(0.0631)	(0.0630)
Unemp_st_dev			0.2489			0.2049			0.3072**			0.2049
			(0.2227)			(0.1250)			(0.1033)			(0.1498)
First regions			0.2489			0.2049			0.3072**			0.2049
			(0.2227)			(0.1250)			(0.1033)			(0.1498)
*First regions*Benefits*			0.0427			-0.0888			-0.1164			-0.1297
			(0.2053)			(0.0978)			(0.0713)			(0.1338)
Constant	5.0083***	5.7483***	5.7539***	3.5007***	4.2399***	4.2321***	1.1187	1.8585***	1.8485***	-1.0551	-0.3162	-0.3265
	(0.8722)	(0.4887)	(0.4908)	(0.7701)	(0.2951)	(0.2952)	(0.7508)	(0.2476)	(0.2476)	(0.7896)	(0.3432)	(0.3432)
Observations	56070	56070	56070	56070	56070	56070	56070	56070	56070	56070	56070	56070
ll	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04	-6.85e+04
chi2	11090	11089	11127	11090	11089	11127	11090	11089	11127	11090	11089	11127

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.3 Wellbeing of disabled individuals – all sample (IV estimation)

3.11.3.1 Life satisfaction, happiness, worthiness, and anxiety – all sample (2sls) (complete results)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
PIP	0.0825+	0.1185**	0.0825+	0.1067+	0.1215*	0.1063+	-0.1233+	-0.1703**	-0.1227+	0.0577	0.0806*	0.0580
	(0.0437)	(0.0375)	(0.0437)	(0.0546)	(0.0473)	(0.0546)	(0.0707)	(0.0619)	(0.0707)	(0.0432)	(0.0365)	(0.0432)
Disab (IV)	-0.7277***	-0.7282***	-0.7317***	-0.6301***	-0.6307***	-0.5831***	0.7510***	0.7518***	0.6909***	-0.4847***	-0.4850***	-0.5189***
	(0.0327)	(0.0327)	(0.0439)	(0.0394)	(0.0394)	(0.0521)	(0.0500)	(0.0500)	(0.0663)	(0.0320)	(0.0320)	(0.0435)
*PIP*Disab (IV)*	-0.1249*	-0.1213*	-0.1249*	-0.0827	-0.0786	-0.0825	0.0602	0.0538	0.0599	-0.0742	-0.0723	-0.0743
	(0.0545)	(0.0545)	(0.0545)	(0.0656)	(0.0657)	(0.0656)	(0.0832)	(0.0832)	(0.0832)	(0.0536)	(0.0536)	(0.0536)
Benefits	-0.1441***	-0.1444***	-0.1438***	-0.0410+	-0.0411+	-0.0443+	0.0951**	0.0954**	0.0993***	0.0342+	0.0340+	0.0366*
	(0.0191)	(0.0191)	(0.0191)	(0.0231)	(0.0231)	(0.0232)	(0.0298)	(0.0298)	(0.0299)	(0.0184)	(0.0184)	(0.0185)
First regions	-0.1111+	-0.0521	-0.1111+	-0.0043	-0.0897	-0.0050	0.0177	0.0893	0.0186	-0.0544	0.0083	-0.0540
	(0.0661)	(0.0747)	(0.0661)	(0.0797)	(0.0906)	(0.0797)	(0.0997)	(0.1132)	(0.0997)	(0.0652)	(0.0737)	(0.0652)
Married	0.7217***	0.7218***	0.7217***	0.5244***	0.5242***	0.5248***	-0.2168***	-0.2167***	-0.2173***	0.4905***	0.4906***	0.4902***
	(0.0189)	(0.0189)	(0.0189)	(0.0224)	(0.0224)	(0.0224)	(0.0279)	(0.0279)	(0.0279)	(0.0183)	(0.0183)	(0.0183)
Female	0.1555***	0.1556***	0.1506***	0.0567**	0.0565**	0.1144**	0.2444***	0.2445***	0.1704**	0.3273***	0.3274***	0.2853***
	(0.0179)	(0.0179)	(0.0338)	(0.0213)	(0.0213)	(0.0423)	(0.0270)	(0.0270)	(0.0554)	(0.0177)	(0.0177)	(0.0331)
*Female*Disab (IV)*			0.0074			-0.0871			0.1117			0.0634
			(0.0498)			(0.0596)			(0.0756)			(0.0491)
Age	-0.0969***	-0.0969***	-0.0969***	-0.0813***	-0.0813***	-0.0814***	0.0944***	0.0944***	0.0945***	-0.0496***	-0.0496***	-0.0496***
	(0.0051)	(0.0051)	(0.0051)	(0.0060)	(0.0060)	(0.0060)	(0.0076)	(0.0076)	(0.0076)	(0.0050)	(0.0050)	(0.0050)
Age squared	0.0011***	0.0011***	0.0011***	0.0010***	0.0010***	0.0010***	-0.0011***	-0.0011***	-0.0011***	0.0006***	0.0006***	0.0006***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	0.0124	0.0123	0.0124	0.0666+	0.0666+	0.0663+	-0.1069*	-0.1069*	-0.1065*	0.0202	0.0202	0.0204
	(0.0277)	(0.0277)	(0.0277)	(0.0340)	(0.0340)	(0.0340)	(0.0448)	(0.0448)	(0.0448)	(0.0270)	(0.0270)	(0.0270)
GCE, A-level or equivalent	-0.0332	-0.0332	-0.0331	0.0063	0.0062	0.0058	-0.1044**	-0.1042**	-0.1036**	-0.0461*	-0.0460*	-0.0457*
	(0.0231)	(0.0231)	(0.0231)	(0.0284)	(0.0284)	(0.0284)	(0.0369)	(0.0369)	(0.0369)	(0.0230)	(0.0230)	(0.0230)
GCSE grades A-C or equivalent*	-0.0747**	-0.0749**	-0.0746**	0.0185	0.0184	0.0183	-0.1354***	-0.1351***	-0.1351***	-0.0555*	-0.0557*	-0.0553*

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.0234)	(0.0234)	(0.0234)	(0.0277)	(0.0277)	(0.0277)	(0.0352)	(0.0352)	(0.0352)	(0.0230)	(0.0230)	(0.0230)
Other qualifications	-0.0111	-0.0110	-0.0110	0.0639+	0.0639+	0.0635+	-0.1498**	-0.1497**	-0.1493**	-0.0042	-0.0041	-0.0038
	(0.0327)	(0.0327)	(0.0327)	(0.0377)	(0.0377)	(0.0377)	(0.0464)	(0.0464)	(0.0464)	(0.0318)	(0.0318)	(0.0318)
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Educ_squared	0.0016	0.0016	0.0016	0.0000	0.0000	0.0000	-0.0032*	-0.0032*	-0.0032*	-0.0066***	-0.0067***	-0.0066***
	(0.0011)	(0.0011)	(0.0011)	(0.0012)	(0.0012)	(0.0012)	(0.0015)	(0.0015)	(0.0015)	(0.0010)	(0.0010)	(0.0010)
Age_left_FT_educ	-0.0087	-0.0087	-0.0087	-0.0002	-0.0002	-0.0003	-0.0246*	-0.0247*	-0.0246*	0.0002	0.0003	0.0003
	(0.0077)	(0.0076)	(0.0077)	(0.0094)	(0.0094)	(0.0094)	(0.0117)	(0.0117)	(0.0117)	(0.0080)	(0.0080)	(0.0080)
Age_left_educ_squared	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0008*	0.0008*	0.0008*	-0.0001	-0.0001	-0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.2347***	-0.2343***	-0.2347***	-0.1389***	-0.1384***	-0.1379***	0.1722***	0.1713***	0.1709***	-0.1212***	-0.1211***	-0.1220***
	(0.0214)	(0.0214)	(0.0214)	(0.0260)	(0.0260)	(0.0260)	(0.0339)	(0.0339)	(0.0339)	(0.0205)	(0.0205)	(0.0205)
Terraced	-0.3276**	-0.3271**	-0.3277**	-0.2550+	-0.2544+	-0.2543+	0.2972	0.2959	0.2963	-0.1723	-0.1720	-0.1728
	(0.1175)	(0.1174)	(0.1175)	(0.1474)	(0.1474)	(0.1474)	(0.1852)	(0.1852)	(0.1854)	(0.1101)	(0.1102)	(0.1102)
Flatmaisonette - purpose built	-0.3111***	-0.3105***	-0.3112***	-0.2666***	-0.2661***	-0.2654***	0.2777***	0.2766***	0.2761***	-0.1420***	-0.1417***	-0.1428***
	(0.0259)	(0.0259)	(0.0259)	(0.0312)	(0.0312)	(0.0312)	(0.0396)	(0.0396)	(0.0396)	(0.0253)	(0.0253)	(0.0253)
Flatmaiste - part hseconverted hse	-0.0665	-0.0666	-0.0666	-0.1857	-0.1850	-0.1840	0.0670	0.0664	0.0648	0.0130	0.0127	0.0118
	(0.1037)	(0.1038)	(0.1038)	(0.1190)	(0.1190)	(0.1191)	(0.1415)	(0.1416)	(0.1417)	(0.1035)	(0.1035)	(0.1035)
Gypsy, Traveller/Irish Traveller	-0.3156	-0.3281	-0.3156	-0.2831	-0.2909	-0.2817	0.7900	0.8067	0.7883	-0.6482	-0.6573	-0.6479
	(0.5565)	(0.5583)	(0.5566)	(0.5761)	(0.5769)	(0.5748)	(0.6433)	(0.6443)	(0.6440)	(0.6935)	(0.6937)	(0.6944)
Mixed / Multiple ethnic groups	-0.1665	-0.1680	-0.1665	-0.0447	-0.0434	-0.0441	0.1714	0.1707	0.1706	0.0827	0.0813	0.0822
	(0.1044)	(0.1045)	(0.1044)	(0.1170)	(0.1171)	(0.1171)	(0.1632)	(0.1634)	(0.1632)	(0.1049)	(0.1049)	(0.1048)
Indian	0.0335	0.0367	0.0334	0.2048+	0.2048+	0.2059+	0.0336	0.0322	0.0323	-0.0408	-0.0383	-0.0416
	(0.1024)	(0.1022)	(0.1024)	(0.1161)	(0.1161)	(0.1161)	(0.1542)	(0.1542)	(0.1542)	(0.0939)	(0.0939)	(0.0939)
Pakistani	-0.0047	-0.0041	-0.0046	0.0335	0.0336	0.0325	0.1185	0.1179	0.1195	0.0638	0.0644	0.0644
	(0.1205)	(0.1205)	(0.1205)	(0.1410)	(0.1410)	(0.1410)	(0.1688)	(0.1687)	(0.1687)	(0.1166)	(0.1166)	(0.1166)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Bangladeshi	-0.1801	-0.1838	-0.1800	0.1799	0.1767	0.1786	-0.1318	-0.1263	-0.1300	-0.0736	-0.0757	-0.0726
	(0.1673)	(0.1673)	(0.1673)	(0.2004)	(0.2004)	(0.2004)	(0.2466)	(0.2463)	(0.2464)	(0.1524)	(0.1524)	(0.1523)
Chinese	0.1251	0.1246	0.1249	0.2637	0.2627	0.2656	-0.1874	-0.1847	-0.1897	-0.2394	-0.2393	-0.2408
	(0.1432)	(0.1429)	(0.1432)	(0.1758)	(0.1756)	(0.1755)	(0.2862)	(0.2852)	(0.2863)	(0.1606)	(0.1605)	(0.1607)
Any other Asian background	0.1361	0.1368	0.1361	0.1020	0.1022	0.1011	-0.3278+	-0.3281+	-0.3267+	0.0058	0.0063	0.0064
	(0.1046)	(0.1046)	(0.1046)	(0.1548)	(0.1545)	(0.1549)	(0.1770)	(0.1767)	(0.1771)	(0.1098)	(0.1098)	(0.1098)
Black/ African/Caribbean/Black British	-0.3606***	-0.3613***	-0.3606***	0.0361	0.0353	0.0361	-0.3359***	-0.3345***	-0.3359***	-0.0408	-0.0411	-0.0408
	(0.0670)	(0.0671)	(0.0670)	(0.0770)	(0.0770)	(0.0770)	(0.0956)	(0.0956)	(0.0956)	(0.0640)	(0.0640)	(0.0640)
Arab	0.1037	0.1028	0.1040	0.0516	0.0527	0.0480	0.1535	0.1524	0.1581	-0.0646	-0.0656	-0.0621
	(0.1921)	(0.1921)	(0.1922)	(0.2423)	(0.2422)	(0.2421)	(0.2846)	(0.2849)	(0.2846)	(0.1989)	(0.1990)	(0.1989)
Other ethnic group	-0.2109*	-0.2108*	-0.2108*	-0.2476*	-0.2485*	-0.2488*	-0.0610	-0.0600	-0.0596	-0.2410*	-0.2409*	-0.2401*
	(0.0970)	(0.0970)	(0.0970)	(0.1208)	(0.1209)	(0.1209)	(0.1478)	(0.1478)	(0.1478)	(0.1029)	(0.1029)	(0.1029)
Christian (all denominations)	0.1518***	0.1515***	0.1518***	0.2069***	0.2067***	0.2070***	0.0558+	0.0562+	0.0557+	0.2224***	0.2222***	0.2223***
	(0.0192)	(0.0192)	(0.0192)	(0.0232)	(0.0232)	(0.0232)	(0.0294)	(0.0294)	(0.0294)	(0.0189)	(0.0189)	(0.0189)
Buddhist	-0.1353	-0.1360	-0.1352	0.1524	0.1541	0.1520	0.6470***	0.6452***	0.6475***	0.0587	0.0578	0.0590
	(0.1485)	(0.1486)	(0.1485)	(0.1565)	(0.1566)	(0.1565)	(0.1893)	(0.1892)	(0.1894)	(0.1562)	(0.1561)	(0.1563)
Hindu	0.0698	0.0665	0.0698	0.0797	0.0808	0.0799	0.2789	0.2790	0.2788	0.2454*	0.2428*	0.2454*
	(0.1193)	(0.1192)	(0.1193)	(0.1442)	(0.1441)	(0.1442)	(0.1811)	(0.1812)	(0.1812)	(0.1091)	(0.1090)	(0.1091)
Jewish	-0.2047	-0.2047	-0.2048+	-0.2474	-0.2461	-0.2462	0.5944**	0.5929**	0.5928**	-0.1139	-0.1141	-0.1148
	(0.1245)	(0.1245)	(0.1245)	(0.1553)	(0.1552)	(0.1552)	(0.1946)	(0.1944)	(0.1948)	(0.1204)	(0.1203)	(0.1205)
Muslim	0.2893**	0.2891**	0.2892**	0.1171	0.1175	0.1181	0.0168	0.0164	0.0157	0.2015*	0.2011*	0.2008*
	(0.0881)	(0.0881)	(0.0881)	(0.1061)	(0.1061)	(0.1061)	(0.1305)	(0.1305)	(0.1305)	(0.0885)	(0.0885)	(0.0885)
Sikh	-0.1948	-0.1953	-0.1948	-0.1790	-0.1794	-0.1799	0.3834+	0.3840+	0.3844+	0.0789	0.0788	0.0796
	(0.1579)	(0.1578)	(0.1579)	(0.1724)	(0.1724)	(0.1725)	(0.2236)	(0.2235)	(0.2236)	(0.1442)	(0.1442)	(0.1443)
Any other religion	-0.1403*	-0.1406*	-0.1403*	0.1410*	0.1404*	0.1418*	0.3007***	0.3018***	0.2998***	0.1548*	0.1547*	0.1543*
	(0.0635)	(0.0635)	(0.0635)	(0.0687)	(0.0687)	(0.0687)	(0.0905)	(0.0905)	(0.0906)	(0.0629)	(0.0629)	(0.0629)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Employed	0.3820***	0.3820***	0.3821***	0.1508***	0.1505***	0.1503***	-0.1928***	-0.1924***	-0.1921***	0.2391***	0.2391***	0.2395***
	(0.0276)	(0.0276)	(0.0276)	(0.0326)	(0.0326)	(0.0326)	(0.0410)	(0.0410)	(0.0410)	(0.0268)	(0.0268)	(0.0268)
Self-employed	0.3638***	0.3645***	0.3638***	0.2100***	0.2100***	0.2101***	-0.1658**	-0.1661**	-0.1658**	0.3838***	0.3843***	0.3838***
	(0.0350)	(0.0350)	(0.0350)	(0.0412)	(0.0412)	(0.0412)	(0.0536)	(0.0536)	(0.0536)	(0.0335)	(0.0335)	(0.0335)
Gov. employed training	-0.3938*	-0.3889*	-0.3937*	0.0386	0.0388	0.0376	0.1487	0.1452	0.1499	-0.4208*	-0.4168*	-0.4200*
	(0.1817)	(0.1820)	(0.1817)	(0.2089)	(0.2090)	(0.2089)	(0.2299)	(0.2299)	(0.2300)	(0.1803)	(0.1802)	(0.1804)
Student	0.3727***	0.3743***	0.3727***	0.1618	0.1615	0.1616	0.1910	0.1909	0.1912	0.2956**	0.2970**	0.2958**
	(0.0877)	(0.0876)	(0.0877)	(0.1123)	(0.1124)	(0.1124)	(0.1433)	(0.1432)	(0.1432)	(0.0921)	(0.0921)	(0.0921)
Retired	0.6427***	0.6428***	0.6427***	0.4670***	0.4668***	0.4673***	-0.5404***	-0.5402***	-0.5407***	0.2012***	0.2012***	0.2010***
	(0.0348)	(0.0348)	(0.0348)	(0.0411)	(0.0411)	(0.0411)	(0.0542)	(0.0542)	(0.0542)	(0.0339)	(0.0339)	(0.0339)
Disabled, not working	-0.5804***	-0.5806***	-0.5803***	-0.6667***	-0.6670***	-0.6678***	0.6865***	0.6869***	0.6879***	-0.8764***	-0.8765***	-0.8756***
	(0.0367)	(0.0367)	(0.0367)	(0.0415)	(0.0415)	(0.0415)	(0.0500)	(0.0500)	(0.0500)	(0.0368)	(0.0368)	(0.0368)
Length of time at address:												
12 mths but less than 2 years	-0.0066	-0.0061	-0.0065	-0.0129	-0.0125	-0.0134	-0.0947	-0.0955	-0.0941	0.0146	0.0149	0.0150
	(0.0443)	(0.0443)	(0.0443)	(0.0540)	(0.0540)	(0.0540)	(0.0682)	(0.0681)	(0.0681)	(0.0440)	(0.0440)	(0.0440)
2 years but less than 3 years	-0.0513	-0.0510	-0.0513	-0.0150	-0.0150	-0.0151	-0.1176+	-0.1177+	-0.1175+	-0.0182	-0.0179	-0.0181
	(0.0465)	(0.0465)	(0.0465)	(0.0567)	(0.0567)	(0.0568)	(0.0704)	(0.0704)	(0.0705)	(0.0465)	(0.0465)	(0.0465)
3 years but less than 5 years	-0.0308	-0.0295	-0.0308	-0.0468	-0.0463	-0.0469	-0.1214*	-0.1228*	-0.1214*	0.0041	0.0050	0.0041
	(0.0410)	(0.0410)	(0.0410)	(0.0490)	(0.0490)	(0.0490)	(0.0616)	(0.0616)	(0.0616)	(0.0411)	(0.0412)	(0.0411)
5 years but less than 10 years	-0.0530	-0.0521	-0.0530	-0.0259	-0.0254	-0.0260	-0.0892	-0.0904	-0.0891	-0.0049	-0.0042	-0.0048
	(0.0372)	(0.0373)	(0.0372)	(0.0448)	(0.0448)	(0.0448)	(0.0563)	(0.0563)	(0.0563)	(0.0373)	(0.0373)	(0.0373)
10 years or longer	-0.0851*	-0.0839*	-0.0851*	-0.0872*	-0.0866*	-0.0871*	-0.0655	-0.0669	-0.0656	-0.0183	-0.0175	-0.0183
	(0.0365)	(0.0365)	(0.0365)	(0.0438)	(0.0438)	(0.0438)	(0.0543)	(0.0543)	(0.0543)	(0.0363)	(0.0363)	(0.0363)
Ex-smoker	0.3776***	0.3778***	0.3776***	0.3208***	0.3212***	0.3212***	-0.2593***	-0.2599***	-0.2597***	0.2766***	0.2767***	0.2763***
	(0.0236)	(0.0236)	(0.0236)	(0.0282)	(0.0282)	(0.0282)	(0.0353)	(0.0353)	(0.0353)	(0.0235)	(0.0235)	(0.0235)
Never smoked	0.4545***	0.4545***	0.4545***	0.4129***	0.4131***	0.4131***	-0.2959***	-0.2961***	-0.2962***	0.3361***	0.3361***	0.3359***
	(0.0239)	(0.0239)	(0.0239)	(0.0285)	(0.0285)	(0.0285)	(0.0352)	(0.0352)	(0.0352)	(0.0237)	(0.0237)	(0.0237)
Diff. reg wage	0.0120+		0.0120+	0.0123		0.0123	-0.0234*		-0.0234*	0.0074		0.0074

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.0068)		(0.0068)	(0.0082)		(0.0082)	(0.0104)		(0.0104)	(0.0067)		(0.0067)
Log regional unem	-0.3632		-0.3630	-0.0428		-0.0458	0.2690		0.2727	-0.2523		-0.2502
	(0.2573)		(0.2573)	(0.3120)		(0.3120)	(0.3920)		(0.3920)	(0.2531)		(0.2531)
Face-to-face interview	-0.1566***	-0.1535***	-0.1565***	-0.1109***	-0.1098***	-0.1110***	0.0132	0.0098	0.0133	-0.1400***	-0.1378***	-0.1399***
	(0.0176)	(0.0176)	(0.0176)	(0.0215)	(0.0215)	(0.0215)	(0.0276)	(0.0276)	(0.0276)	(0.0171)	(0.0171)	(0.0171)
North West	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Yorkshire and The Humber	-0.0539	-0.0227	-0.0539	0.0056	-0.0547	0.0048	-0.0293	0.0242	-0.0282	-0.0027	0.0330	-0.0021
	(0.0550)	(0.0614)	(0.0550)	(0.0658)	(0.0737)	(0.0658)	(0.0826)	(0.0927)	(0.0826)	(0.0537)	(0.0600)	(0.0537)
East Midlands	-0.1253	-0.0383	-0.1252	0.0236	-0.0751	0.0226	0.0283	0.0955	0.0295	-0.0578	0.0281	-0.0571
	(0.0876)	(0.0924)	(0.0876)	(0.1057)	(0.1116)	(0.1057)	(0.1325)	(0.1403)	(0.1325)	(0.0858)	(0.0907)	(0.0858)
West Midlands	-0.1390*	-0.1149+	-0.1389*	-0.0484	-0.1218	-0.0488	-0.1858*	-0.1155	-0.1852*	-0.1544**	-0.1226+	-0.1541**
	(0.0593)	(0.0677)	(0.0593)	(0.0720)	(0.0825)	(0.0720)	(0.0900)	(0.1039)	(0.0900)	(0.0581)	(0.0664)	(0.0581)
East of England	-0.2092	-0.1124	-0.2091	0.0381	-0.0125	0.0365	0.0676	0.0492	0.0695	-0.1184	-0.0454	-0.1174
	(0.1278)	(0.0732)	(0.1278)	(0.1539)	(0.0883)	(0.1539)	(0.1933)	(0.1125)	(0.1933)	(0.1259)	(0.0716)	(0.1259)
London	-0.0636	0.2168	-0.0636	0.0348	0.0445	0.0344	0.2137**	0.1332	0.2143**	-0.0728	0.1625	-0.0724
	(0.0523)	(0.1800)	(0.0523)	(0.0632)	(0.2142)	(0.0632)	(0.0795)	(0.2730)	(0.0795)	(0.0516)	(0.1785)	(0.0516)
South East	-0.1971	0.0058	-0.1969	-0.0201	-0.0319	-0.0219	0.1202	0.0236	0.1224	-0.1304	0.0208	-0.1292
	(0.1439)	(0.0473)	(0.1439)	(0.1745)	(0.0568)	(0.1745)	(0.2184)	(0.0716)	(0.2184)	(0.1417)	(0.0465)	(0.1417)
South West	-0.2111	-0.0911	-0.2109	0.0017	-0.0280	-0.0003	0.0604	0.0024	0.0629	-0.1308	-0.0466	-0.1295
	(0.1450)	(0.0659)	(0.1450)	(0.1743)	(0.0786)	(0.1743)	(0.2188)	(0.1005)	(0.2188)	(0.1419)	(0.0649)	(0.1418)
Wales	-0.0278	0.0944	-0.0278	0.0944	0.0227	0.0940	-0.0220	0.0100	-0.0216	0.0311	0.1438+	0.0313
	(0.0713)	(0.0845)	(0.0713)	(0.0861)	(0.1022)	(0.0861)	(0.1074)	(0.1272)	(0.1074)	(0.0701)	(0.0836)	(0.0701)
Scotland	0.0181	0.0267	0.0181	0.0497	-0.0614	0.0489	-0.0898	0.0052	-0.0889	-0.0406	-0.0201	-0.0401
	(0.0875)	(0.1132)	(0.0874)	(0.1057)	(0.1372)	(0.1057)	(0.1320)	(0.1737)	(0.1320)	(0.0862)	(0.1112)	(0.0862)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Spring	-0.0007	0.0007	-0.0007	0.0735**	0.0740**	0.0737**	0.0314	0.0301	0.0312	0.0251	0.0262	0.0250
	(0.0232)	(0.0232)	(0.0232)	(0.0279)	(0.0279)	(0.0279)	(0.0354)	(0.0354)	(0.0354)	(0.0227)	(0.0227)	(0.0227)
Summer	0.0260	0.0261	0.0260	0.0982***	0.0983***	0.0982***	0.0138	0.0135	0.0137	0.0425+	0.0426+	0.0425+
	(0.0230)	(0.0230)	(0.0230)	(0.0274)	(0.0274)	(0.0274)	(0.0348)	(0.0348)	(0.0348)	(0.0226)	(0.0225)	(0.0225)
Autumn	0.0023	0.0023	0.0023	-0.0050	-0.0050	-0.0049	0.1061**	0.1061**	0.1060**	0.0505*	0.0505*	0.0505*
	(0.0230)	(0.0230)	(0.0230)	(0.0277)	(0.0277)	(0.0277)	(0.0350)	(0.0350)	(0.0350)	(0.0226)	(0.0226)	(0.0226)
Wage_st_dev		-0.0058			-0.0015			0.0031			-0.0046	
		(0.0039)			(0.0046)			(0.0059)			(0.0038)	
Unemp_st_dev		0.0437			-0.0467			0.0459			0.0499	
		(0.0526)			(0.0639)			(0.0804)			(0.0523)	
Constant	9.8190***	9.1002***	9.8208***	8.3764***	8.4245***	8.3549***	0.9948	1.4132***	1.0226	8.6714***	8.1584***	8.6871***
	(0.6248)	(0.1827)	(0.6252)	(0.7575)	(0.2236)	(0.7580)	(0.9486)	(0.2814)	(0.9490)	(0.6182)	(0.1861)	(0.6185)
Observations	81657	81657	81657	81637	81637	81637	81561	81561	81561	81421	81421	81421
R-squared	0.18	0.18	0.18	0.096	0.096	0.096	0.055	0.055	0.055	0.14	0.14	0.14
ll	-1.70e+05	-1.70e+05	-1.70e+05	-1.85e+05	-1.85e+05	-1.85e+05	-2.04e+05	-2.04e+05	-2.04e+05	-1.67e+05	-1.67e+05	-1.67e+05

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.3.2 Self-assessed health – all sample (PPO) (complete results)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
PIP	-0.1000	-0.1305	-0.1162	-0.1676	-0.2055	-0.1671	0.1052+	0.0650	0.1045+	0.0904	0.0501	0.0888
	(0.3352)	(0.3347)	(0.3330)	(0.1341)	(0.1323)	(0.1345)	(0.0548)	(0.0500)	(0.0547)	(0.0677)	(0.0637)	(0.0678)
Disab (IV)	-3.2010***	-3.1944***	-2.9916***	-3.0845***	-3.0829***	-2.9822***	-2.1040***	-2.1039***	-1.9692***	-1.7096***	-1.7096***	-1.5480***
	(0.2318)	(0.2310)	(0.2935)	(0.0822)	(0.0822)	(0.1185)	(0.0375)	(0.0375)	(0.0517)	(0.0636)	(0.0636)	(0.0867)
*PIP*Disab (IV)*	0.0292	0.0167	0.0452	0.0847	0.0799	0.0843	-0.0847	-0.0865	-0.0848	-0.0285	-0.0300	-0.0258
	(0.3332)	(0.3332)	(0.3310)	(0.1357)	(0.1359)	(0.1361)	(0.0666)	(0.0666)	(0.0666)	(0.1139)	(0.1140)	(0.1143)
Benefits	-0.4728***	-0.4728***	-0.4822***	-0.3944***	-0.3941***	-0.4003***	-0.1611***	-0.1610***	-0.1676***	-0.0068	-0.0068	-0.0117
	(0.0863)	(0.0863)	(0.0867)	(0.0369)	(0.0369)	(0.0371)	(0.0226)	(0.0226)	(0.0227)	(0.0308)	(0.0308)	(0.0307)
First regions	0.2199*	0.2191+	0.2200*	0.0710	0.0708	0.0704	0.2050**	0.2054**	0.2042**	0.1275	0.1285	0.1259
	(0.1074)	(0.1131)	(0.1074)	(0.0772)	(0.0850)	(0.0773)	(0.0687)	(0.0772)	(0.0687)	(0.0854)	(0.0923)	(0.0854)
Married	0.0015	0.0014	0.0024	0.0015	0.0014	0.0024	0.0015	0.0014	0.0024	0.0015	0.0014	0.0024
	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)	(0.0180)
Female	0.1460**	0.1458**	0.5406	0.1174***	0.1173***	0.2752*	0.0520*	0.0519*	0.2122***	-0.0339	-0.0337	0.1240*
	(0.0465)	(0.0465)	(0.3316)	(0.0281)	(0.0281)	(0.1261)	(0.0214)	(0.0214)	(0.0448)	(0.0300)	(0.0300)	(0.0577)
*Female*Disab (IV)*			-0.4126			-0.1886			-0.2516***			-0.3169**
			(0.3303)			(0.1302)			(0.0605)			(0.1039)
Age	-0.0507**	-0.0507**	-0.0505**	-0.0650***	-0.0649***	-0.0650***	-0.0594***	-0.0593***	-0.0596***	-0.0508***	-0.0507***	-0.0509***
	(0.0179)	(0.0179)	(0.0179)	(0.0092)	(0.0092)	(0.0092)	(0.0059)	(0.0059)	(0.0059)	(0.0072)	(0.0072)	(0.0072)
Age squared	0.0005**	0.0005**	0.0005**	0.0007***	0.0006***	0.0007***	0.0005***	0.0005***	0.0005***	0.0004***	0.0004***	0.0004***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.2184*	-0.2180*	-0.2193*	-0.1181*	-0.1182*	-0.1190*	0.0016	0.0014	0.0009	-0.0484	-0.0486	-0.0488
	(0.0943)	(0.0943)	(0.0943)	(0.0547)	(0.0547)	(0.0548)	(0.0351)	(0.0351)	(0.0352)	(0.0447)	(0.0447)	(0.0447)
GCE, A-level or equivalent	-0.2222**	-0.2218**	-0.2253**	-0.2014***	-0.2011***	-0.2026***	-0.0683*	-0.0682*	-0.0695*	-0.1717***	-0.1715***	-0.1726***
	(0.0692)	(0.0692)	(0.0693)	(0.0411)	(0.0411)	(0.0411)	(0.0289)	(0.0289)	(0.0288)	(0.0383)	(0.0383)	(0.0383)
GCSE grades A-C or equivalent*	-0.1054+	-0.1058+	-0.1070+	-0.0342	-0.0344	-0.0344	-0.0401	-0.0400	-0.0408	-0.1451***	-0.1450***	-0.1453***
	(0.0633)	(0.0633)	(0.0633)	(0.0375)	(0.0375)	(0.0375)	(0.0274)	(0.0274)	(0.0274)	(0.0386)	(0.0386)	(0.0386)
Other qualifications	-0.0108	-0.0110	-0.0107	0.0718+	0.0720+	0.0717+	0.0298	0.0302	0.0285	-0.0799	-0.0795	-0.0810
	(0.0710)	(0.0710)	(0.0709)	(0.0433)	(0.0433)	(0.0433)	(0.0352)	(0.0352)	(0.0352)	(0.0552)	(0.0552)	(0.0552)
Educ_squared	-0.0097***	-0.0096***	-0.0097***	-0.0097***	-0.0096***	-0.0097***	-0.0097***	-0.0096***	-0.0097***	-0.0097***	-0.0096***	-0.0097***

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)
Age_left_FT_educ	0.0034	0.0034	0.0032	0.0046	0.0047	0.0044	0.0145+	0.0146+	0.0144+	0.0004	0.0004	0.0002
	(0.0102)	(0.0102)	(0.0102)	(0.0086)	(0.0086)	(0.0086)	(0.0079)	(0.0079)	(0.0079)	(0.0084)	(0.0084)	(0.0084)
Age_left_educ_squared	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
House or bungalow - semi detached	-0.1274***	-0.1278***	-0.1250***	-0.1274***	-0.1278***	-0.1250***	-0.1274***	-0.1278***	-0.1250***	-0.1274***	-0.1278***	-0.1250***
	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)
Terraced	-0.3545**	-0.3550**	-0.3530**	-0.3545**	-0.3550**	-0.3530**	-0.3545**	-0.3550**	-0.3530**	-0.3545**	-0.3550**	-0.3530**
	(0.1359)	(0.1359)	(0.1360)	(0.1359)	(0.1359)	(0.1360)	(0.1359)	(0.1359)	(0.1360)	(0.1359)	(0.1359)	(0.1360)
Flatmaisonette - purpose built	-0.2929***	-0.2934***	-0.2899***	-0.2929***	-0.2934***	-0.2899***	-0.2929***	-0.2934***	-0.2899***	-0.2929***	-0.2934***	-0.2899***
	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)	(0.0259)
Flatmaiste - part hseconverted hse	-0.4581***	-0.4579***	-0.4529***	-0.4581***	-0.4579***	-0.4529***	-0.4581***	-0.4579***	-0.4529***	-0.4581***	-0.4579***	-0.4529***
	(0.0988)	(0.0987)	(0.0989)	(0.0988)	(0.0987)	(0.0989)	(0.0988)	(0.0987)	(0.0989)	(0.0988)	(0.0987)	(0.0989)
Gypsy, Traveller/Irish Traveller	0.3216	0.3237	0.3255	0.3216	0.3237	0.3255	0.3216	0.3237	0.3255	0.3216	0.3237	0.3255
	(0.3906)	(0.3886)	(0.3898)	(0.3906)	(0.3886)	(0.3898)	(0.3906)	(0.3886)	(0.3898)	(0.3906)	(0.3886)	(0.3898)
Mixed / Multiple ethnic groups	0.0269	0.0275	0.0283	0.0269	0.0275	0.0283	0.0269	0.0275	0.0283	0.0269	0.0275	0.0283
	(0.0919)	(0.0920)	(0.0920)	(0.0919)	(0.0920)	(0.0920)	(0.0919)	(0.0920)	(0.0920)	(0.0919)	(0.0920)	(0.0920)
Indian	-0.2160*	-0.2167*	-0.2118*	-0.2160*	-0.2167*	-0.2118*	-0.2160*	-0.2167*	-0.2118*	-0.2160*	-0.2167*	-0.2118*
	(0.0965)	(0.0966)	(0.0965)	(0.0965)	(0.0966)	(0.0965)	(0.0965)	(0.0966)	(0.0965)	(0.0965)	(0.0966)	(0.0965)
Pakistani	-0.2737**	-0.2738**	-0.2743**	-0.2737**	-0.2738**	-0.2743**	-0.2737**	-0.2738**	-0.2743**	-0.2737**	-0.2738**	-0.2743**
	(0.1031)	(0.1031)	(0.1030)	(0.1031)	(0.1031)	(0.1030)	(0.1031)	(0.1031)	(0.1030)	(0.1031)	(0.1031)	(0.1030)
Bangladeshi	-0.2104	-0.2093	-0.2133	-0.2104	-0.2093	-0.2133	-0.2104	-0.2093	-0.2133	-0.2104	-0.2093	-0.2133
	(0.1523)	(0.1523)	(0.1518)	(0.1523)	(0.1523)	(0.1518)	(0.1523)	(0.1523)	(0.1518)	(0.1523)	(0.1523)	(0.1518)
Chinese	-0.1842	-0.1813	-0.1781	-0.1842	-0.1813	-0.1781	-0.1842	-0.1813	-0.1781	-0.1842	-0.1813	-0.1781
	(0.1799)	(0.1801)	(0.1803)	(0.1799)	(0.1801)	(0.1803)	(0.1799)	(0.1801)	(0.1803)	(0.1799)	(0.1801)	(0.1803)
Any other Asian background	-0.3181**	-0.3178**	-0.3188**	-0.3181**	-0.3178**	-0.3188**	-0.3181**	-0.3178**	-0.3188**	-0.3181**	-0.3178**	-0.3188**
	(0.1101)	(0.1101)	(0.1099)	(0.1101)	(0.1101)	(0.1099)	(0.1101)	(0.1101)	(0.1099)	(0.1101)	(0.1101)	(0.1099)
Black/ African/Caribbean/Black British	-0.1968***	-0.1959***	-0.1966***	-0.1968***	-0.1959***	-0.1966***	-0.1968***	-0.1959***	-0.1966***	-0.1968***	-0.1959***	-0.1966***
	(0.0583)	(0.0583)	(0.0584)	(0.0583)	(0.0583)	(0.0584)	(0.0583)	(0.0583)	(0.0584)	(0.0583)	(0.0583)	(0.0584)
Arab	-0.0556	-0.0562	-0.0616	-0.0556	-0.0562	-0.0616	-0.0556	-0.0562	-0.0616	-0.0556	-0.0562	-0.0616

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.1633)	(0.1633)	(0.1631)	(0.1633)	(0.1633)	(0.1631)	(0.1633)	(0.1633)	(0.1631)	(0.1633)	(0.1633)	(0.1631)
Other ethnic group	-0.0674	-0.0673	-0.0689	-0.0674	-0.0673	-0.0689	-0.0674	-0.0673	-0.0689	-0.0674	-0.0673	-0.0689
	(0.0882)	(0.0882)	(0.0880)	(0.0882)	(0.0882)	(0.0880)	(0.0882)	(0.0882)	(0.0880)	(0.0882)	(0.0882)	(0.0880)
Christian (all denominations)	0.0162	0.0164	0.0164	0.0162	0.0164	0.0164	0.0162	0.0164	0.0164	0.0162	0.0164	0.0164
	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)	(0.0193)
Buddhist	0.1466	0.1468	0.1455	0.1466	0.1468	0.1455	0.1466	0.1468	0.1455	0.1466	0.1468	0.1455
	(0.1617)	(0.1617)	(0.1613)	(0.1617)	(0.1617)	(0.1613)	(0.1617)	(0.1617)	(0.1613)	(0.1617)	(0.1617)	(0.1613)
Hindu	-0.0760	-0.0746	-0.0766	-0.0760	-0.0746	-0.0766	-0.0760	-0.0746	-0.0766	-0.0760	-0.0746	-0.0766
	(0.1146)	(0.1146)	(0.1145)	(0.1146)	(0.1146)	(0.1145)	(0.1146)	(0.1146)	(0.1145)	(0.1146)	(0.1146)	(0.1145)
Jewish	-0.4236***	-0.4230***	-0.4214***	-0.4236***	-0.4230***	-0.4214***	-0.4236***	-0.4230***	-0.4214***	-0.4236***	-0.4230***	-0.4214***
	(0.1230)	(0.1230)	(0.1224)	(0.1230)	(0.1230)	(0.1224)	(0.1230)	(0.1230)	(0.1224)	(0.1230)	(0.1230)	(0.1224)
Muslim	-0.2341**	-0.2342**	-0.2325**	-0.2341**	-0.2342**	-0.2325**	-0.2341**	-0.2342**	-0.2325**	-0.2341**	-0.2342**	-0.2325**
	(0.0770)	(0.0771)	(0.0770)	(0.0770)	(0.0771)	(0.0770)	(0.0770)	(0.0771)	(0.0770)	(0.0770)	(0.0771)	(0.0770)
Sikh	-0.1739	-0.1730	-0.1773	-0.1739	-0.1730	-0.1773	-0.1739	-0.1730	-0.1773	-0.1739	-0.1730	-0.1773
	(0.1416)	(0.1417)	(0.1415)	(0.1416)	(0.1417)	(0.1415)	(0.1416)	(0.1417)	(0.1415)	(0.1416)	(0.1417)	(0.1415)
Any other religion	-0.2647***	-0.2637***	-0.2635***	-0.2647***	-0.2637***	-0.2635***	-0.2647***	-0.2637***	-0.2635***	-0.2647***	-0.2637***	-0.2635***
	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0560)
Employed	0.1030	0.1037	0.1005	0.1101*	0.1106*	0.1097*	0.1207***	0.1209***	0.1200***	0.1010*	0.1009*	0.0991*
	(0.1250)	(0.1250)	(0.1247)	(0.0475)	(0.0475)	(0.0476)	(0.0292)	(0.0291)	(0.0292)	(0.0433)	(0.0433)	(0.0433)
Self-employed	-0.0128	-0.0133	-0.0084	0.1463*	0.1458*	0.1483*	0.2457***	0.2453***	0.2442***	0.2543***	0.2540***	0.2506***
	(0.1646)	(0.1646)	(0.1648)	(0.0680)	(0.0680)	(0.0681)	(0.0397)	(0.0397)	(0.0396)	(0.0556)	(0.0556)	(0.0556)
Gov. employed training	-0.7740*	-0.7753*	-0.7757*	-0.0239	-0.0258	-0.0236	-0.1162	-0.1173	-0.1196	0.1660	0.1655	0.1602
	(0.3191)	(0.3190)	(0.3186)	(0.1887)	(0.1884)	(0.1885)	(0.1792)	(0.1787)	(0.1783)	(0.3176)	(0.3173)	(0.3163)
Student	-0.6037	-0.6019	-0.5972	-0.3502+	-0.3484+	-0.3503+	0.2233*	0.2238*	0.2223*	0.3523**	0.3527**	0.3510**
	(0.4272)	(0.4276)	(0.4285)	(0.1996)	(0.1997)	(0.1998)	(0.1127)	(0.1127)	(0.1130)	(0.1289)	(0.1289)	(0.1289)
Retired	-0.5318***	-0.5315***	-0.5324***	-0.1682**	-0.1677**	-0.1669**	0.0639	0.0641	0.0644	0.0886	0.0884	0.0877
	(0.1345)	(0.1345)	(0.1344)	(0.0595)	(0.0595)	(0.0596)	(0.0393)	(0.0392)	(0.0393)	(0.0591)	(0.0591)	(0.0591)
Disabled, not working	-1.9269***	-1.9268***	-1.9265***	-1.7854***	-1.7851***	-1.7855***	-1.5444***	-1.5440***	-1.5491***	-1.5459***	-1.5456***	-1.5593***
	(0.0914)	(0.0914)	(0.0913)	(0.0411)	(0.0412)	(0.0412)	(0.0455)	(0.0455)	(0.0455)	(0.1096)	(0.1095)	(0.1102)
Length of time at address:												
12 mths but less than 2 years	-0.0611	-0.0617	-0.0625	-0.0611	-0.0617	-0.0625	-0.0611	-0.0617	-0.0625	-0.0611	-0.0617	-0.0625

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.0437)	(0.0437)	(0.0436)	(0.0437)	(0.0437)	(0.0436)	(0.0437)	(0.0437)	(0.0436)	(0.0437)	(0.0437)	(0.0436)
2 years but less than 3 years	-0.0528	-0.0528	-0.0535	-0.0528	-0.0528	-0.0535	-0.0528	-0.0528	-0.0535	-0.0528	-0.0528	-0.0535
	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)	(0.0451)
3 years but less than 5 years	-0.0677+	-0.0682+	-0.0683+	-0.0677+	-0.0682+	-0.0683+	-0.0677+	-0.0682+	-0.0683+	-0.0677+	-0.0682+	-0.0683+
	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)	(0.0390)
5 years but less than 10 years	-0.0555	-0.0562	-0.0560	-0.0555	-0.0562	-0.0560	-0.0555	-0.0562	-0.0560	-0.0555	-0.0562	-0.0560
	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)	(0.0361)
10 years or longer	-0.1044**	-0.1053**	-0.1049**	-0.1044**	-0.1053**	-0.1049**	-0.1044**	-0.1053**	-0.1049**	-0.1044**	-0.1053**	-0.1049**
	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)
Ex-smoker	0.2507***	0.2506***	0.2513***	0.2507***	0.2506***	0.2513***	0.2507***	0.2506***	0.2513***	0.2507***	0.2506***	0.2513***
	(0.0223)	(0.0223)	(0.0222)	(0.0223)	(0.0223)	(0.0222)	(0.0223)	(0.0223)	(0.0222)	(0.0223)	(0.0223)	(0.0222)
Never smoked	0.3355***	0.3357***	0.3360***	0.3355***	0.3357***	0.3360***	0.3355***	0.3357***	0.3360***	0.3355***	0.3357***	0.3360***
	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)	(0.0223)
Diff. reg wage	-0.0081		-0.0081	-0.0081		-0.0081	-0.0081		-0.0081	-0.0081		-0.0081
	(0.0067)		(0.0067)	(0.0067)		(0.0067)	(0.0067)		(0.0067)	(0.0067)		(0.0067)
Log regional unem	0.2631		0.2604	0.2631		0.2604	0.2631		0.2604	0.2631		0.2604
	(0.2544)		(0.2543)	(0.2544)		(0.2543)	(0.2544)		(0.2543)	(0.2544)		(0.2543)
Face-to-face interview	-0.1235*	-0.1254*	-0.1249*	-0.1964***	-0.1981***	-0.1966***	-0.2489***	-0.2506***	-0.2487***	-0.2971***	-0.2987***	-0.2970***
	(0.0527)	(0.0527)	(0.0526)	(0.0304)	(0.0304)	(0.0304)	(0.0215)	(0.0215)	(0.0216)	(0.0289)	(0.0289)	(0.0289)
North West	0.1933+	0.1907	0.1926+	0.1568*	0.1541*	0.1560*	0.2214***	0.2187***	0.2194***	0.2643***	0.2616**	0.2623***
	(0.1128)	(0.1160)	(0.1128)	(0.0720)	(0.0771)	(0.0720)	(0.0589)	(0.0650)	(0.0589)	(0.0779)	(0.0828)	(0.0779)
Yorkshire and The Humber	0.2288	0.2089	0.2286	0.1731+	0.1532	0.1724+	0.1728+	0.1530	0.1712+	0.1318	0.1120	0.1306
	(0.1401)	(0.1429)	(0.1401)	(0.1011)	(0.1053)	(0.1011)	(0.0897)	(0.0947)	(0.0897)	(0.1063)	(0.1111)	(0.1063)
East Midlands	0.1275	0.1223	0.1275	0.1331+	0.1277	0.1324+	0.1421*	0.1367+	0.1421*	0.0562	0.0508	0.0565
	(0.1190)	(0.1234)	(0.1189)	(0.0767)	(0.0837)	(0.0768)	(0.0633)	(0.0716)	(0.0633)	(0.0856)	(0.0917)	(0.0857)
West Midlands	0.3084+	0.1906	0.3066+	0.1745	0.0568	0.1727	0.3332**	0.2159**	0.3326**	0.2657+	0.1485	0.2650+
	(0.1705)	(0.1362)	(0.1705)	(0.1376)	(0.0918)	(0.1376)	(0.1284)	(0.0776)	(0.1284)	(0.1389)	(0.0940)	(0.1389)
East of England	0.2717*	0.3838+	0.2704*	0.1835**	0.2952	0.1829*	0.2069***	0.3185+	0.2065***	0.1178	0.2295	0.1172
	(0.1095)	(0.2013)	(0.1095)	(0.0712)	(0.1833)	(0.0712)	(0.0570)	(0.1784)	(0.0570)	(0.0775)	(0.1857)	(0.0775)
London	0.3229+	0.2162+	0.3201+	0.1798	0.0729	0.1779	0.3496*	0.2421***	0.3477*	0.2807+	0.1726*	0.2792+

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.1742)	(0.1106)	(0.1741)	(0.1500)	(0.0666)	(0.1500)	(0.1440)	(0.0522)	(0.1440)	(0.1521)	(0.0718)	(0.1521)
South East	0.2805	0.1367	0.2791	0.2226	0.0792	0.2201	0.3945**	0.2503***	0.3919**	0.3611*	0.2167*	0.3585*
	(0.1755)	(0.1223)	(0.1755)	(0.1508)	(0.0832)	(0.1508)	(0.1436)	(0.0700)	(0.1436)	(0.1523)	(0.0873)	(0.1524)
South West	0.2891*	0.2971*	0.2891*	0.2225**	0.2304*	0.2223**	0.2698***	0.2776**	0.2707***	0.2714**	0.2792**	0.2715**
	(0.1144)	(0.1226)	(0.1144)	(0.0829)	(0.0944)	(0.0829)	(0.0736)	(0.0862)	(0.0736)	(0.0893)	(0.1000)	(0.0893)
Wales	0.3755**	0.3088*	0.3752**	0.2263*	0.1603	0.2255*	0.3440***	0.2785*	0.3440***	0.3480***	0.2832*	0.3481***
	(0.1229)	(0.1419)	(0.1229)	(0.0958)	(0.1201)	(0.0958)	(0.0886)	(0.1148)	(0.0886)	(0.1019)	(0.1252)	(0.1020)
Scotland	-0.0369	-0.0373	-0.0366	-0.0369	-0.0373	-0.0366	-0.0369	-0.0373	-0.0366	-0.0369	-0.0373	-0.0366
	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)
Northern Ireland	0.0255	0.0252	0.0253	0.0255	0.0252	0.0253	0.0255	0.0252	0.0253	0.0255	0.0252	0.0253
	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)
Spring	-0.0369	-0.0373	-0.0366	-0.0369	-0.0373	-0.0366	-0.0369	-0.0373	-0.0366	-0.0369	-0.0373	-0.0366
	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)
Summer	0.0255	0.0252	0.0253	0.0255	0.0252	0.0253	0.0255	0.0252	0.0253	0.0255	0.0252	0.0253
	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)	(0.0226)
Autumn	-0.0115	-0.0116	-0.0116	-0.0115	-0.0116	-0.0116	-0.0115	-0.0116	-0.0116	-0.0115	-0.0116	-0.0116
	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)	(0.0227)
Wage_st_dev		-0.0023			-0.0023			-0.0023			-0.0023	
		(0.0038)			(0.0038)			(0.0038)			(0.0038)	
Unemp_st_dev		0.0456			0.0456			0.0456			0.0456	
		(0.0522)			(0.0522)			(0.0522)			(0.0522)	
Constant	8.1750***	8.7841***	7.9891***	6.2853***	6.8985***	6.2103***	2.8155***	3.4304***	2.7417***	0.3268	0.9417***	0.2580
	(0.7960)	(0.5245)	(0.8245)	(0.6597)	(0.2863)	(0.6665)	(0.6233)	(0.2038)	(0.6236)	(0.6347)	(0.2316)	(0.6351)
Observations	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108	82108
ll	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04	-9.38e+04	-9.38e+04	-9.37e+04
chi2	21539	21544	21882	21539	21544	21882	21539	21544	21882	21539	21544	21882

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.4 Wellbeing of disabled individuals claiming benefits

3.11.4.1 Life satisfaction, happiness, anxiety and worthiness measures of WB in disabled population (2SLS) (complete results)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
PIP	-0.0749	-0.0198	-0.0743	-0.0738	-0.0447	-0.0737	0.1525	0.898	0.1532	-0.0863	-0.0511	-0.0854
	(0.0632)	(0.3993)	(0.0631)	(0.0813)	(0.0764)	(0.0813)	(0.1062)	(0.0999)	(0.1062)	(0.0648)	(0.0599)	(0.0648)
*Disab*Benefit(IV)*	-0.3997***	-0.3993***	-0.2946**	-0.4351***	-0.4356***	-0.3045*	0.6204***	0.6213***	0.5607***	-0.1936**	-0.1936**	-0.0992
	(0.0664)	(0.0664)	(0.0950)	(0.0833)	(0.0833)	(0.1190)	(0.1087)	(0.1087)	(0.1528)	(0.0634)	(0.0634)	(0.0935)
*PIP*Disab*Benefits(IV)*	-0.5645***	-0.5641***	-0.5616***	-0.6416***	-0.6397***	-0.6382***	1.0502***	1.0475***	1.0484***	-0.5092***	-0.5069***	-0.5063***
	(0.1371)	(0.1372)	(0.1371)	(0.1773)	(0.1773)	(0.1773)	(0.2295)	(0.2295)	(0.2295)	(0.1402)	(0.1402)	(0.1402)
Disab(IV)	-0.5849***	-0.5850***	-0.6330***	-0.4628***	-0.4624***	-0.4961***	0.5044***	0.5040***	0.4792***	-0.4244***	-0.4242***	-0.4703***
	(0.0452)	(0.0452)	(0.0673)	(0.0558)	(0.0558)	(0.0827)	(0.0718)	(0.0717)	(0.1057)	(0.0435)	(0.0436)	(0.0666)
*PIP*Disab(IV)*	0.2101*	0.2121*	0.2096*	0.2621*	0.2631*	0.2611*	-0.5004**	-0.5044**	-0.5010**	0.2077*	0.2078*	0.2080*
	(0.0954)	(0.0956)	(0.0954)	(0.1212)	(0.1213)	(0.1212)	(0.1581)	(0.1582)	(0.1581)	(0.0958)	(0.0959)	(0.0958)
Benefits	0.1260**	0.1248**	0.0187	0.2277***	0.2274***	0.1366	-0.3057***	-0.3049***	-0.2329*	0.1670***	0.1665***	0.0195
	(0.0473)	(0.0473)	(0.0693)	(0.0592)	(0.0592)	(0.0865)	(0.0768)	(0.0768)	(0.1103)	(0.0450)	(0.0450)	(0.0680)
*PIP*Benefits*	0.2542**	0.2565**	0.2511*	0.3621**	0.3636**	0.3596**	-0.6051***	-0.6091***	-0.6031***	0.2632**	0.2632**	0.2586**
	(0.0979)	(0.0979)	(0.0978)	(0.1270)	(0.1270)	(0.1270)	(0.1641)	(0.1642)	(0.1642)	(0.0997)	(0.0997)	(0.0997)
Female	0.1451***	0.1454***	.	0.0452*	0.0452*	.	0.2690***	0.2690***	.	0.3151***	0.3153***	.
	(0.0189)	(0.0189)	.	(0.0224)	(0.0224)	.	(0.0285)	(0.0285)	.	(0.0186)	(0.0186)	.
*Female*Disab*Benefits(IV)*			-0.1882			-0.2463+			0.1180			-0.1611
			(0.1159)			(0.1456)			(0.1881)			(0.1139)
*Female*Disab(IV)*			0.0877			0.0599			0.0420			0.0866
			(0.0808)			(0.1003)			(0.1295)			(0.0790)
*Female*Benefits*			0.1910*			0.1642			-0.1300			0.2603**
			(0.0850)			(0.1066)			(0.1373)			(0.0830)
First regions	-0.1144+	-0.0189	-0.1152+	-0.0019	-0.0481	-0.0034	0.0336	0.1476	0.0348	-0.0526	.	-0.0533
	(0.0691)	(0.0784)	(0.0691)	(0.0830)	(0.0949)	(0.0830)	(0.1041)	(0.1190)	(0.1041)	(0.0681)	.	(0.0681)
Married	0.7128***	0.7129***	0.7127***	0.5130***	0.5130***	0.5135***	-0.1884***	-0.1883***	-0.1886***	0.4834***	0.4835***	0.4828***
	(0.0198)	(0.0198)	(0.0198)	(0.0235)	(0.0235)	(0.0235)	(0.0293)	(0.0293)	(0.0293)	(0.0192)	(0.0192)	(0.0192)
Age	-0.0970***	-0.0971***	-0.0975***	-0.0795***	-0.0796***	-0.0797***	0.0913***	0.0914***	0.0917***	-0.0508***	-0.0508***	-0.0518***
	(0.0053)	(0.0053)	(0.0053)	(0.0063)	(0.0063)	(0.0063)	(0.0080)	(0.0080)	(0.0080)	(0.0052)	(0.0052)	(0.0052)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Age squared	0.0011***	0.0011***	0.0011***	0.0009***	0.0009***	0.0009***	-0.0010***	-0.0010***	-0.0010***	0.0006***	0.0006***	0.0006***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	0.0146	0.0143	0.0139	0.0776*	0.0776*	0.0775*	-0.1061*	-0.1059*	-0.1053*	0.0262	0.0260	0.0247
	(0.0292)	(0.0292)	(0.0292)	(0.0357)	(0.0357)	(0.0357)	(0.0469)	(0.0469)	(0.0469)	(0.0284)	(0.0284)	(0.0284)
GCE, A-level or equivalent	-0.0377	-0.0380	-0.0377	0.0090	0.0088	0.0090	-0.1124**	-0.1119**	-0.1116**	-0.0390	-0.0392	-0.0393
	(0.0242)	(0.0242)	(0.0242)	(0.0298)	(0.0298)	(0.0298)	(0.0386)	(0.0386)	(0.0386)	(0.0241)	(0.0242)	(0.0241)
GCSE grades A-C or equivalent*	-0.0893***	-0.0898***	-0.0896***	0.0029	0.0026	0.0028	-0.1157**	-0.1150**	-0.1153**	-0.0647**	-0.0650**	-0.0654**
	(0.0247)	(0.0247)	(0.0247)	(0.0291)	(0.0291)	(0.0291)	(0.0370)	(0.0370)	(0.0370)	(0.0242)	(0.0242)	(0.0242)
Other qualifications	0.0014	0.0013	0.0016	0.0620	0.0617	0.0617	-0.1376**	-0.1372**	-0.1372**	0.0143	0.0142	0.0147
	(0.0339)	(0.0339)	(0.0339)	(0.0393)	(0.0393)	(0.0393)	(0.0484)	(0.0484)	(0.0484)	(0.0330)	(0.0330)	(0.0330)
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Educ_squared	0.0015	0.0015	0.0015	0.0004	0.0004	0.0004	-0.0036*	-0.0036*	-0.0036*	-0.0067***	-0.0067***	-0.0068***
	(0.0011)	(0.0011)	(0.0011)	(0.0013)	(0.0013)	(0.0013)	(0.0016)	(0.0016)	(0.0016)	(0.0011)	(0.0011)	(0.0011)
Age_left_FT_educ	-0.0084	-0.0084	-0.0085	0.0005	0.0005	0.0004	-0.0246*	-0.0247*	-0.0244*	0.0023	0.0023	0.0021
	(0.0081)	(0.0081)	(0.0081)	(0.0099)	(0.0100)	(0.0100)	(0.0123)	(0.0123)	(0.0123)	(0.0085)	(0.0085)	(0.0085)
Age_left_educ_squared	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0008*	0.0008*	0.0008*	-0.0001	-0.0001	-0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.2349***	-0.2346***	-0.2353***	-0.1365***	-0.1361***	-0.1355***	0.1705***	0.1695***	0.1697***	-0.1232***	-0.1230***	-0.1247***
	(0.0224)	(0.0224)	(0.0224)	(0.0272)	(0.0272)	(0.0272)	(0.0355)	(0.0356)	(0.0356)	(0.0215)	(0.0215)	(0.0215)
Terraced	-0.3600**	-0.3585**	-0.3580**	-0.2598+	-0.2587+	-0.2576+	0.4238*	0.4223*	0.4206*	-0.2102+	-0.2094+	-0.2070+
	(0.1201)	(0.1202)	(0.1203)	(0.1524)	(0.1523)	(0.1522)	(0.1888)	(0.1888)	(0.1889)	(0.1106)	(0.1107)	(0.1106)
Flatmaisonette - purpose built	-0.3169***	-0.3161***	-0.3160***	-0.2606***	-0.2600***	-0.2592***	0.2694***	0.2679***	0.2672***	-0.1433***	-0.1428***	-0.1419***
	(0.0273)	(0.0273)	(0.0273)	(0.0327)	(0.0327)	(0.0327)	(0.0418)	(0.0418)	(0.0418)	(0.0267)	(0.0267)	(0.0267)
Flatmaiste - part hseconverted hse	-0.0993	-0.0998	-0.0989	-0.1841	-0.1843	-0.1829	0.0877	0.0871	0.0860	-0.0043	-0.0045	-0.0041
	(0.1110)	(0.1110)	(0.1108)	(0.1246)	(0.1247)	(0.1246)	(0.1505)	(0.1505)	(0.1506)	(0.1118)	(0.1118)	(0.1114)
Gypsy, Traveller/Irish Traveller	-0.0944	-0.1087	-0.0911	-0.3483	-0.3555	-0.3435	0.7898	0.8098	0.7863	-0.5194	-0.5289	-0.5131
	(0.5703)	(0.5722)	(0.5705)	(0.5923)	(0.5929)	(0.5917)	(0.6421)	(0.6425)	(0.6416)	(0.7129)	(0.7130)	(0.7161)
Mixed / Multiple ethnic groups	-0.1156	-0.1183	-0.1146	0.0560	0.0563	0.0581	0.0915	0.0911	0.0903	0.1062	0.1044	0.1066
	(0.1092)	(0.1093)	(0.1091)	(0.1190)	(0.1191)	(0.1192)	(0.1704)	(0.1707)	(0.1704)	(0.1076)	(0.1077)	(0.1075)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Indian	0.0891	0.0933	0.0909	0.2625*	0.2625*	0.2644*	0.0082	0.0077	0.0055	-0.0391	-0.0361	-0.0362
	(0.1027)	(0.1026)	(0.1028)	(0.1219)	(0.1219)	(0.1219)	(0.1619)	(0.1618)	(0.1618)	(0.0999)	(0.0999)	(0.0999)
Pakistani	0.0443	0.0445	0.0459	0.0579	0.0582	0.0571	0.0004	-0.0006	-0.0003	0.0825	0.0828	0.0866
	(0.1247)	(0.1246)	(0.1246)	(0.1467)	(0.1467)	(0.1467)	(0.1777)	(0.1776)	(0.1776)	(0.1206)	(0.1206)	(0.1206)
Bangladeshi	-0.1943	-0.1984	-0.1922	0.1814	0.1785	0.1820	-0.1660	-0.1579	-0.1662	-0.1053	-0.1079	-0.1020
	(0.1749)	(0.1750)	(0.1749)	(0.2116)	(0.2116)	(0.2118)	(0.2580)	(0.2577)	(0.2579)	(0.1580)	(0.1581)	(0.1577)
Chinese	0.0134	0.0119	0.0150	0.3764*	0.3749*	0.3810*	-0.1615	-0.1605	-0.1641	-0.3136+	-0.3141+	-0.3139+
	(0.1445)	(0.1440)	(0.1445)	(0.1816)	(0.1814)	(0.1814)	(0.2897)	(0.2879)	(0.2898)	(0.1783)	(0.1782)	(0.1790)
Any other Asian background	0.1290	0.1294	0.1311	0.0715	0.0714	0.0704	-0.3446+	-0.3441+	-0.3450+	-0.0116	-0.0115	-0.0066
	(0.1073)	(0.1074)	(0.1073)	(0.1630)	(0.1628)	(0.1631)	(0.1867)	(0.1862)	(0.1867)	(0.1140)	(0.1139)	(0.1141)
Black/ African/Caribbean/Black British	-0.3742***	-0.3757***	-0.3743***	0.0195	0.0185	0.0205	-0.3635***	-0.3615***	-0.3634***	-0.0425	-0.0434	-0.0440
	(0.0699)	(0.0700)	(0.0699)	(0.0802)	(0.0802)	(0.0802)	(0.0988)	(0.0987)	(0.0987)	(0.0667)	(0.0668)	(0.0667)
Arab	0.1155	0.1138	0.1196	0.0156	0.0163	0.0130	0.2181	0.2180	0.2188	-0.0904	-0.0920	-0.0801
	(0.1977)	(0.1977)	(0.1978)	(0.2528)	(0.2528)	(0.2526)	(0.2970)	(0.2974)	(0.2971)	(0.2058)	(0.2059)	(0.2057)
Other ethnic group	-0.2893**	-0.2885**	-0.2883**	-0.2695*	-0.2698*	-0.2714*	-0.0649	-0.0638	-0.0647	-0.2822**	-0.2818*	-0.2785*
	(0.1027)	(0.1027)	(0.1026)	(0.1284)	(0.1285)	(0.1285)	(0.1572)	(0.1572)	(0.1571)	(0.1094)	(0.1095)	(0.1094)
Christian (all denominations)	0.1568***	0.1564***	0.1567***	0.2195***	0.2193***	0.2196***	0.0463	0.0468	0.0462	0.2176***	0.2173***	0.2174***
	(0.0201)	(0.0201)	(0.0201)	(0.0243)	(0.0243)	(0.0243)	(0.0308)	(0.0308)	(0.0308)	(0.0199)	(0.0199)	(0.0199)
Buddhist	-0.1304	-0.1321	-0.1290	0.1487	0.1499	0.1492	0.6862***	0.6840***	0.6854***	0.0749	0.0734	0.0772
	(0.1538)	(0.1540)	(0.1539)	(0.1616)	(0.1617)	(0.1615)	(0.1923)	(0.1922)	(0.1924)	(0.1615)	(0.1614)	(0.1618)
Hindu	0.0197	0.0150	0.0189	0.1063	0.1066	0.1066	0.3532+	0.3522+	0.3536+	0.2225+	0.2193+	0.2206+
	(0.1231)	(0.1230)	(0.1232)	(0.1504)	(0.1504)	(0.1505)	(0.1906)	(0.1907)	(0.1907)	(0.1164)	(0.1164)	(0.1165)
Jewish	-0.2180+	-0.2187+	-0.2189+	-0.2207	-0.2201	-0.2200	0.5579**	0.5573**	0.5569**	-0.1122	-0.1129	-0.1139
	(0.1289)	(0.1288)	(0.1289)	(0.1633)	(0.1633)	(0.1634)	(0.2035)	(0.2033)	(0.2036)	(0.1248)	(0.1246)	(0.1250)
Muslim	0.2878**	0.2878**	0.2885**	0.1217	0.1220	0.1229	0.0583	0.0573	0.0572	0.1911*	0.1910*	0.1916*
	(0.0911)	(0.0910)	(0.0910)	(0.1112)	(0.1112)	(0.1112)	(0.1380)	(0.1379)	(0.1379)	(0.0914)	(0.0914)	(0.0914)
Sikh	-0.2630	-0.2632	-0.2652	-0.2419	-0.2421	-0.2421	0.4961*	0.4957*	0.4990*	0.0339	0.0339	0.0284
	(0.1649)	(0.1647)	(0.1648)	(0.1834)	(0.1834)	(0.1836)	(0.2367)	(0.2367)	(0.2367)	(0.1537)	(0.1537)	(0.1536)
Any other religion	-0.1287+	-0.1293+	-0.1272+	0.1755*	0.1750*	0.1772*	0.3258***	0.3269***	0.3238***	0.1407*	0.1403*	0.1427*
	(0.0676)	(0.0676)	(0.0676)	(0.0720)	(0.0721)	(0.0721)	(0.0953)	(0.0953)	(0.0953)	(0.0669)	(0.0669)	(0.0668)
Employed	0.3576***	0.3577***	0.3560***	0.1244***	0.1241***	0.1236***	-0.1619***	-0.1614***	-0.1601***	0.2244***	0.2245***	0.2213***

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.0288)	(0.0288)	(0.0288)	(0.0340)	(0.0340)	(0.0340)	(0.0429)	(0.0429)	(0.0429)	(0.0280)	(0.0280)	(0.0280)
Self-employed	0.3341***	0.3351***	0.3329***	0.1806***	0.1809***	0.1823***	-0.1357*	-0.1364*	-0.1345*	0.3597***	0.3604***	0.3552***
	(0.0368)	(0.0368)	(0.0368)	(0.0432)	(0.0432)	(0.0432)	(0.0559)	(0.0559)	(0.0560)	(0.0351)	(0.0351)	(0.0351)
Gov. employed training	-0.2958	-0.2899	-0.2865	0.1437	0.1447	0.1453	0.1000	0.0983	0.0934	-0.3885*	-0.3844*	-0.3689+
	(0.1935)	(0.1940)	(0.1937)	(0.2235)	(0.2237)	(0.2237)	(0.2460)	(0.2460)	(0.2464)	(0.1944)	(0.1943)	(0.1943)
Student	0.3857***	0.3861***	0.3832***	0.1349	0.1342	0.1329	0.1758	0.1771	0.1782	0.2864**	0.2868**	0.2824**
	(0.0925)	(0.0925)	(0.0925)	(0.1191)	(0.1192)	(0.1192)	(0.1500)	(0.1499)	(0.1500)	(0.0986)	(0.0987)	(0.0986)
Retired	0.6383***	0.6383***	0.6297***	0.4627***	0.4625***	0.4615***	-0.5452***	-0.5449***	-0.5391***	0.2014***	0.2013***	0.1829***
	(0.0364)	(0.0364)	(0.0367)	(0.0430)	(0.0430)	(0.0434)	(0.0567)	(0.0567)	(0.0572)	(0.0354)	(0.0354)	(0.0356)
Disabled, not working	-0.4919***	-0.4922***	-0.4889***	-0.5769***	-0.5773***	-0.5781***	0.5807***	0.5813***	0.5785***	-0.8147***	-0.8148***	-0.8064***
	(0.0389)	(0.0389)	(0.0390)	(0.0444)	(0.0444)	(0.0445)	(0.0538)	(0.0537)	(0.0538)	(0.0391)	(0.0391)	(0.0392)
Length of time at address:												
12 mths but less than 2 years	-0.0117	-0.0111	-0.0118	-0.0272	-0.0270	-0.0273	-0.0842	-0.0849	-0.0836	-0.0018	-0.0014	-0.0022
	(0.0462)	(0.0462)	(0.0462)	(0.0564)	(0.0564)	(0.0564)	(0.0714)	(0.0713)	(0.0713)	(0.0463)	(0.0463)	(0.0463)
2 years but less than 3 years	-0.0692	-0.0687	-0.0695	-0.0233	-0.0233	-0.0236	-0.1126	-0.1125	-0.1124	-0.0320	-0.0317	-0.0322
	(0.0485)	(0.0485)	(0.0485)	(0.0595)	(0.0595)	(0.0595)	(0.0741)	(0.0741)	(0.0741)	(0.0489)	(0.0489)	(0.0489)
3 years but less than 5 years	-0.0309	-0.0295	-0.0309	-0.0639	-0.0633	-0.0639	-0.1167+	-0.1177+	-0.1166+	0.0009	0.0018	0.0008
	(0.0427)	(0.0428)	(0.0427)	(0.0513)	(0.0513)	(0.0513)	(0.0644)	(0.0644)	(0.0644)	(0.0432)	(0.0432)	(0.0432)
5 years but less than 10 years	-0.0625	-0.0613	-0.0630	-0.0478	-0.0471	-0.0478	-0.0829	-0.0841	-0.0824	-0.0120	-0.0112	-0.0132
	(0.0388)	(0.0389)	(0.0389)	(0.0470)	(0.0470)	(0.0470)	(0.0590)	(0.0590)	(0.0590)	(0.0393)	(0.0393)	(0.0393)
10 years or longer	-0.0896*	-0.0880*	-0.0897*	-0.1007*	-0.1000*	-0.1005*	-0.0528	-0.0542	-0.0528	-0.0269	-0.0259	-0.0274
	(0.0380)	(0.0380)	(0.0380)	(0.0458)	(0.0458)	(0.0458)	(0.0568)	(0.0568)	(0.0568)	(0.0382)	(0.0382)	(0.0382)
Ex-smoker	0.3856***	0.3859***	0.3851***	0.3442***	0.3446***	0.3448***	-0.2906***	-0.2915***	-0.2906***	0.2899***	0.2901***	0.2883***
	(0.0246)	(0.0246)	(0.0246)	(0.0295)	(0.0296)	(0.0296)	(0.0370)	(0.0370)	(0.0370)	(0.0246)	(0.0246)	(0.0246)
Never smoked	0.4535***	0.4536***	0.4531***	0.4249***	0.4252***	0.4251***	-0.3150***	-0.3156***	-0.3150***	0.3470***	0.3471***	0.3461***
	(0.0249)	(0.0249)	(0.0249)	(0.0298)	(0.0298)	(0.0298)	(0.0368)	(0.0368)	(0.0368)	(0.0247)	(0.0247)	(0.0247)
Diff. reg wage	0.0142*		0.0142*	0.0133		0.0132	-0.0239*		-0.0239*	0.0080		0.0080
	(0.0072)		(0.0072)	(0.0087)		(0.0087)	(0.0109)		(0.0109)	(0.0071)		(0.0071)
Log regional unem	-0.5045+		-0.5057+	-0.1185		-0.1250	0.4277		0.4324	-0.3469		-0.3452
	(0.2705)		(0.2704)	(0.3268)		(0.3268)	(0.4122)		(0.4122)	(0.2651)		(0.2650)
Face-to-face interview	-0.1582***	-0.1537***	-0.1585***	-0.1154***	-0.1133***	-0.1160***	0.0212	0.0177	0.0215	-0.1468***	-0.1440***	-0.1468***
	(0.0184)	(0.0184)	(0.0184)	(0.0224)	(0.0224)	(0.0224)	(0.0288)	(0.0288)	(0.0288)	(0.0178)	(0.0178)	(0.0178)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
North West	.	.	.	.	.	.	.	.	.	.	0.0182	.
	.	.	.	.	.	.	.	.	.	.	(0.0773)	.
Yorkshire and The Humber	-0.0605	-0.0033	-0.0611	0.0135	-0.0169	0.0122	-0.0188	0.0633	-0.0174	-0.0003	0.0417	-0.0008
	(0.0573)	(0.0644)	(0.0573)	(0.0686)	(0.0775)	(0.0685)	(0.0863)	(0.0979)	(0.0863)	(0.0560)	(0.0632)	(0.0560)
East Midlands	-0.1409	0.0014	-0.1427	0.0298	-0.0115	0.0275	0.0803	0.1917	0.0828	-0.0549	0.0471	-0.0572
	(0.0910)	(0.0976)	(0.0910)	(0.1095)	(0.1181)	(0.1095)	(0.1376)	(0.1490)	(0.1376)	(0.0889)	(0.0958)	(0.0888)
West Midlands	-0.1669**	-0.1074	-0.1676**	-0.0579	-0.0948	-0.0592	-0.1428	-0.0403	-0.1419	-0.1659**	-0.1221+	-0.1664**
	(0.0634)	(0.0729)	(0.0633)	(0.0762)	(0.0882)	(0.0762)	(0.0961)	(0.1121)	(0.0961)	(0.0617)	(0.0712)	(0.0617)
East of England	-0.2526+	-0.0748	-0.2543+	0.0164	0.0377	0.0129	0.1250	0.0658	0.1280	-0.1512	-0.0310	-0.1523
	(0.1330)	(0.0789)	(0.1330)	(0.1596)	(0.0954)	(0.1596)	(0.2008)	(0.1222)	(0.2008)	(0.1304)	(0.0781)	(0.1304)
London	-0.0713	0.1788	-0.0730	0.0253	-0.0329	0.0238	0.2148**	0.1991	0.2163**	-0.0666	0.1288	-0.0691
	(0.0537)	(0.1968)	(0.0537)	(0.0648)	(0.2349)	(0.0648)	(0.0817)	(0.2979)	(0.0818)	(0.0531)	(0.1972)	(0.0531)
South East	-0.2681+	0.0105	-0.2698+	-0.0549	-0.0243	-0.0585	0.2084	0.0507	0.2118	-0.1701	0.0259	-0.1715
	(0.1506)	(0.0497)	(0.1505)	(0.1818)	(0.0596)	(0.1818)	(0.2283)	(0.0753)	(0.2283)	(0.1477)	(0.0493)	(0.1476)
South West	-0.2857+	-0.0773	-0.2866+	-0.0344	0.0095	-0.0380	0.1245	-0.0079	0.1275	-0.1696	-0.0296	-0.1693
	(0.1529)	(0.0722)	(0.1528)	(0.1830)	(0.0866)	(0.1830)	(0.2301)	(0.1106)	(0.2301)	(0.1489)	(0.0721)	(0.1488)
Wales	-0.0527	0.1016	-0.0536	0.0789	0.0357	0.0776	-0.0013	0.0873	-0.0004	0.0263	0.1397	0.0253
	(0.0741)	(0.0879)	(0.0741)	(0.0892)	(0.1061)	(0.0891)	(0.1115)	(0.1321)	(0.1115)	(0.0727)	(0.0870)	(0.0727)
Scotland	-0.0121	0.0722	-0.0132	0.0492	0.0271	0.0474	-0.0515	0.0671	-0.0499	-0.0566	-0.0023	-0.0576
	(0.0906)	(0.1227)	(0.0905)	(0.1091)	(0.1489)	(0.1091)	(0.1367)	(0.1890)	(0.1367)	(0.0890)	(0.1214)	(0.0889)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Spring	-0.0136	-0.0118	-0.0141	0.0750*	0.0757*	0.0749*	0.0695+	0.0683+	0.0695+	0.0231	0.0243	0.0223
	(0.0260)	(0.0260)	(0.0260)	(0.0313)	(0.0313)	(0.0313)	(0.0396)	(0.0396)	(0.0396)	(0.0256)	(0.0256)	(0.0256)
Summer	0.0298	0.0300	0.0295	0.1095***	0.1097***	0.1097***	0.0288	0.0283	0.0288	0.0515*	0.0516*	0.0506*
	(0.0254)	(0.0254)	(0.0254)	(0.0303)	(0.0304)	(0.0303)	(0.0384)	(0.0384)	(0.0384)	(0.0251)	(0.0251)	(0.0251)
Autumn	0.0041	0.0041	0.0038	0.0042	0.0042	0.0042	0.1239**	0.1240**	0.1239**	0.0585*	0.0585*	0.0578*
	(0.0254)	(0.0254)	(0.0254)	(0.0305)	(0.0306)	(0.0305)	(0.0385)	(0.0385)	(0.0385)	(0.0250)	(0.0250)	(0.0250)
Wage_st_dev		-0.0047			0.0006			0.0020			-0.0037	
		(0.0043)			(0.0051)			(0.0065)			(0.0043)	

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Unemp_st_dev		0.0477			-0.0406			0.1078			0.0376	
		(0.0557)			(0.0675)			(0.0850)			(0.0554)	
Constant	10.1054***	9.0095***	10.1584***	8.4285***	8.2145***	8.4599***	0.7537	1.4763***	0.7411	8.8860***	8.1375***	8.9628***
	(0.6559)	(0.1967)	(0.6564)	(0.7930)	(0.2392)	(0.7944)	(0.9973)	(0.3032)	(0.9986)	(0.6471)	(0.2013)	(0.6481)
Observations	74206	74206	74206	74185	74185	74185	74110	74110	74110	73981	73981	73981
R-squared	0.18	0.18	0.18	0.097	0.097	0.097	0.056	0.056	0.056	0.14	0.14	0.14
ll	-1.54e+05	-1.54e+05	-1.54e+05	-1.68e+05	-1.68e+05	-1.68e+05	-1.86e+05	-1.86e+05	-1.86e+05	-1.52e+05	-1.52e+05	-1.52e+05

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.4.2 Self-assessed health in disabled population (PPO) (complete results)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
PIP	-0.1547	-0.1914	-0.1606	-0.1192	-0.1638	-0.1153	-0.0204	-0.0671	-0.0244	0.0076	-0.0399	0.0063
	(0.3830)	(0.3825)	(0.3793)	(0.1608)	(0.1591)	(0.1605)	(0.0783)	(0.0746)	(0.0782)	(0.1084)	(0.1056)	(0.1086)
*Disab*Benefits(IV)*	-5.2990***	-5.2911***	-5.3441***	-3.9756***	-3.9848***	-3.7840***	-2.0455***	-2.0441***	-1.9139***	-1.6115***	-1.6123***	-1.5073***
	(0.8207)	(0.8174)	(0.9394)	(0.2797)	(0.2800)	(0.3401)	(0.0857)	(0.0857)	(0.1226)	(0.1076)	(0.1076)	(0.1601)
*PIP*Disab*Benefits(IV)*	0.8416	0.8196	0.8266	-0.7008+	-0.7130+	-0.6983+	-0.7808***	-0.7819***	-0.7806***	-0.4207+	-0.4218+	-0.4174+
	(0.8699)	(0.8703)	(0.8717)	(0.3809)	(0.3814)	(0.3821)	(0.1849)	(0.1850)	(0.1854)	(0.2344)	(0.2345)	(0.2337)
Disab(IV)	-1.7473***	-1.7431***	-1.4698***	-1.7944***	-1.7919***	-1.6670***	-1.2372***	-1.2381***	-1.0962***	-0.9372***	-0.9371***	-0.8081***
	(0.2740)	(0.2735)	(0.3732)	(0.1048)	(0.1047)	(0.1561)	(0.0517)	(0.0517)	(0.0779)	(0.0832)	(0.0831)	(0.1231)
*PIP*Disab(IV)*	-0.1201	-0.1271	-0.1095	0.2013	0.2005	0.1972	0.2065+	0.2062+	0.2103+	0.0696	0.0705	0.0699
	(0.4500)	(0.4506)	(0.4428)	(0.1986)	(0.1986)	(0.1984)	(0.1123)	(0.1123)	(0.1125)	(0.1787)	(0.1789)	(0.1793)
Benefits	2.8991***	2.8936***	2.8848***	2.1101***	2.1160***	1.9590***	1.1388***	1.1381***	0.9879***	1.0235***	1.0241***	0.9879***
	(0.5427)	(0.5406)	(0.6426)	(0.1815)	(0.1817)	(0.2295)	(0.0602)	(0.0602)	(0.0878)	(0.0766)	(0.0767)	(0.1164)
*PIP*Benefits*	-0.5752	-0.5589	-0.5665	0.4770+	0.4854+	0.4751+	0.4661***	0.4662***	0.4655***	0.2487	0.2491	0.2473
	(0.6374)	(0.6376)	(0.6400)	(0.2725)	(0.2729)	(0.2735)	(0.1303)	(0.1303)	(0.1310)	(0.1638)	(0.1639)	(0.1633)
Female	-0.0283	-0.0286	0.3836	0.0025	0.0018	0.2708+	-0.0143	-0.0143	0.1172*	-0.0778*	-0.0775*	0.0653
	(0.0550)	(0.0550)	(0.3587)	(0.0307)	(0.0307)	(0.1419)	(0.0228)	(0.0228)	(0.0598)	(0.0318)	(0.0318)	(0.0859)
*Female*Disab*Benefits(IV)*			0.0033			-0.4622			-0.2845+			-0.2122
			(0.8118)			(0.3424)			(0.1503)			(0.1933)
*Female*Disab(IV)*			-0.5022			-0.2097			-0.2463**			-0.2561+
			(0.4109)			(0.1772)			(0.0939)			(0.1494)
*Female*Benefits*			0.0625			0.3168			0.2836**			0.0728
			(0.6025)			(0.2464)			(0.1081)			(0.1393)
First regions	0.3750***		0.3740**	0.1676*		0.1664*	0.2639***		0.2623***	0.1860*		0.1820*
	(0.1138)		(0.1138)	(0.0813)		(0.0813)	(0.0727)		(0.0727)	(0.0900)		(0.0901)
Married	-0.0192	-0.0192	-0.0181	-0.0192	-0.0192	-0.0181	-0.0192	-0.0192	-0.0181	-0.0192	-0.0192	-0.0181
	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)
Age	-0.0325+	-0.0324+	-0.0324+	-0.0547***	-0.0546***	-0.0547***	-0.0535***	-0.0535***	-0.0545***	-0.0410***	-0.0409***	-0.0402***
	(0.0192)	(0.0192)	(0.0192)	(0.0096)	(0.0096)	(0.0096)	(0.0063)	(0.0063)	(0.0063)	(0.0076)	(0.0076)	(0.0077)
Age squared	0.0003	0.0003	0.0003	0.0005***	0.0005***	0.0005***	0.0004***	0.0004***	0.0004***	0.0003***	0.0003***	0.0003***

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.2260*	-0.2255*	-0.2277*	-0.1502**	-0.1502**	-0.1525**	-0.0161	-0.0162	-0.0178	-0.0630	-0.0631	-0.0625
	(0.1010)	(0.1010)	(0.1011)	(0.0573)	(0.0573)	(0.0574)	(0.0369)	(0.0369)	(0.0370)	(0.0470)	(0.0470)	(0.0470)
GCE, A-level or equivalent	-0.3252***	-0.3246***	-0.3287***	-0.2398***	-0.2395***	-0.2419***	-0.0983**	-0.0981**	-0.1003***	-0.2069***	-0.2065***	-0.2068***
	(0.0728)	(0.0728)	(0.0729)	(0.0434)	(0.0434)	(0.0434)	(0.0305)	(0.0305)	(0.0305)	(0.0405)	(0.0405)	(0.0405)
GCSE grades A-C or equivalent*	-0.2074**	-0.2076**	-0.2095**	-0.0953*	-0.0955*	-0.0965*	-0.0711*	-0.0708*	-0.0727*	-0.1697***	-0.1693***	-0.1694***
	(0.0678)	(0.0678)	(0.0679)	(0.0395)	(0.0395)	(0.0396)	(0.0290)	(0.0290)	(0.0291)	(0.0405)	(0.0405)	(0.0405)
Other qualifications	-0.0113	-0.0110	-0.0115	0.0469	0.0473	0.0470	0.0208	0.0214	0.0186	-0.0893	-0.0887	-0.0904
	(0.0754)	(0.0755)	(0.0754)	(0.0454)	(0.0454)	(0.0453)	(0.0371)	(0.0371)	(0.0372)	(0.0579)	(0.0580)	(0.0579)
Educ_squared	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Age_left_FT_educ	-0.0018	-0.0017	-0.0021	0.0019	0.0020	0.0016	0.0136+	0.0137+	0.0133	-0.0016	-0.0016	-0.0020
	(0.0106)	(0.0106)	(0.0106)	(0.0089)	(0.0089)	(0.0089)	(0.0081)	(0.0081)	(0.0081)	(0.0087)	(0.0087)	(0.0087)
Age_left_educ_squared	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
House or bungalow - semi detached	-0.0974***	-0.0976***	-0.0935***	-0.0974***	-0.0976***	-0.0935***	-0.0974***	-0.0976***	-0.0935***	-0.0974***	-0.0976***	-0.0935***
	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)
Terraced	-0.1986	-0.1985	-0.1904	-0.1986	-0.1985	-0.1904	-0.1986	-0.1985	-0.1904	-0.1986	-0.1985	-0.1904
	(0.1344)	(0.1345)	(0.1345)	(0.1344)	(0.1345)	(0.1345)	(0.1344)	(0.1345)	(0.1345)	(0.1344)	(0.1345)	(0.1345)
Flatmaisonette - purpose built	-0.2295***	-0.2299***	-0.2237***	-0.2295***	-0.2299***	-0.2237***	-0.2295***	-0.2299***	-0.2237***	-0.2295***	-0.2299***	-0.2237***
	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)	(0.0274)
Flatmaiste - part hseconverted hse	-0.5210***	-0.5206***	-0.5146***	-0.5210***	-0.5206***	-0.5146***	-0.5210***	-0.5206***	-0.5146***	-0.5210***	-0.5206***	-0.5146***
	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)	(0.1034)
Gypsy, Traveller/Irish Traveller	0.3625	0.3646	0.3692	0.3625	0.3646	0.3692	0.3625	0.3646	0.3692	0.3625	0.3646	0.3692
	(0.3631)	(0.3618)	(0.3594)	(0.3631)	(0.3618)	(0.3594)	(0.3631)	(0.3618)	(0.3594)	(0.3631)	(0.3618)	(0.3594)
Mixed / Multiple ethnic groups	0.0129	0.0135	0.0154	0.0129	0.0135	0.0154	0.0129	0.0135	0.0154	0.0129	0.0135	0.0154
	(0.0953)	(0.0954)	(0.0952)	(0.0953)	(0.0954)	(0.0952)	(0.0953)	(0.0954)	(0.0952)	(0.0953)	(0.0954)	(0.0952)
Indian	-0.2058*	-0.2058*	-0.1979+	-0.2058*	-0.2058*	-0.1979+	-0.2058*	-0.2058*	-0.1979+	-0.2058*	-0.2058*	-0.1979+
	(0.1039)	(0.1040)	(0.1036)	(0.1039)	(0.1040)	(0.1036)	(0.1039)	(0.1040)	(0.1036)	(0.1039)	(0.1040)	(0.1036)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
Pakistani	-0.2648*	-0.2649*	-0.2643*	-0.2648*	-0.2649*	-0.2643*	-0.2648*	-0.2649*	-0.2643*	-0.2648*	-0.2649*	-0.2643*
	(0.1092)	(0.1092)	(0.1089)	(0.1092)	(0.1092)	(0.1089)	(0.1092)	(0.1092)	(0.1089)	(0.1092)	(0.1092)	(0.1089)
Bangladeshi	-0.1541	-0.1531	-0.1539	-0.1541	-0.1531	-0.1539	-0.1541	-0.1531	-0.1539	-0.1541	-0.1531	-0.1539
	(0.1584)	(0.1583)	(0.1575)	(0.1584)	(0.1583)	(0.1575)	(0.1584)	(0.1583)	(0.1575)	(0.1584)	(0.1583)	(0.1575)
Chinese	-0.2431	-0.2408	-0.2349	-0.2431	-0.2408	-0.2349	-0.2431	-0.2408	-0.2349	-0.2431	-0.2408	-0.2349
	(0.1688)	(0.1684)	(0.1686)	(0.1688)	(0.1684)	(0.1686)	(0.1688)	(0.1684)	(0.1686)	(0.1688)	(0.1684)	(0.1686)
Any other Asian background	-0.4266***	-0.4264***	-0.4271***	-0.4266***	-0.4264***	-0.4271***	-0.4266***	-0.4264***	-0.4271***	-0.4266***	-0.4264***	-0.4271***
	(0.1186)	(0.1186)	(0.1185)	(0.1186)	(0.1186)	(0.1185)	(0.1186)	(0.1186)	(0.1185)	(0.1186)	(0.1186)	(0.1185)
Black/ African/Caribbean/Black British	-0.1772**	-0.1759**	-0.1764**	-0.1772**	-0.1759**	-0.1764**	-0.1772**	-0.1759**	-0.1764**	-0.1772**	-0.1759**	-0.1764**
	(0.0600)	(0.0600)	(0.0603)	(0.0600)	(0.0600)	(0.0603)	(0.0600)	(0.0600)	(0.0603)	(0.0600)	(0.0600)	(0.0603)
Arab	-0.0385	-0.0394	-0.0439	-0.0385	-0.0394	-0.0439	-0.0385	-0.0394	-0.0439	-0.0385	-0.0394	-0.0439
	(0.1767)	(0.1767)	(0.1763)	(0.1767)	(0.1767)	(0.1763)	(0.1767)	(0.1767)	(0.1763)	(0.1767)	(0.1767)	(0.1763)
Other ethnic group	-0.1376	-0.1375	-0.1393	-0.1376	-0.1375	-0.1393	-0.1376	-0.1375	-0.1393	-0.1376	-0.1375	-0.1393
	(0.0925)	(0.0925)	(0.0921)	(0.0925)	(0.0925)	(0.0921)	(0.0925)	(0.0925)	(0.0921)	(0.0925)	(0.0925)	(0.0921)
Christian (all denominations)	0.0192	0.0194	0.0194	0.0192	0.0194	0.0194	0.0192	0.0194	0.0194	0.0192	0.0194	0.0194
	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)
Buddhist	0.1190	0.1183	0.1183	0.1190	0.1183	0.1183	0.1190	0.1183	0.1183	0.1190	0.1183	0.1183
	(0.1687)	(0.1686)	(0.1681)	(0.1687)	(0.1686)	(0.1681)	(0.1687)	(0.1686)	(0.1681)	(0.1687)	(0.1686)	(0.1681)
Hindu	-0.0760	-0.0751	-0.0768	-0.0760	-0.0751	-0.0768	-0.0760	-0.0751	-0.0768	-0.0760	-0.0751	-0.0768
	(0.1236)	(0.1236)	(0.1234)	(0.1236)	(0.1236)	(0.1234)	(0.1236)	(0.1236)	(0.1234)	(0.1236)	(0.1236)	(0.1234)
Jewish	-0.4614***	-0.4610***	-0.4577***	-0.4614***	-0.4610***	-0.4577***	-0.4614***	-0.4610***	-0.4577***	-0.4614***	-0.4610***	-0.4577***
	(0.1272)	(0.1272)	(0.1264)	(0.1272)	(0.1272)	(0.1264)	(0.1272)	(0.1272)	(0.1264)	(0.1272)	(0.1272)	(0.1264)
Muslim	-0.2576**	-0.2579**	-0.2558**	-0.2576**	-0.2579**	-0.2558**	-0.2576**	-0.2579**	-0.2558**	-0.2576**	-0.2579**	-0.2558**
	(0.0814)	(0.0815)	(0.0813)	(0.0814)	(0.0815)	(0.0813)	(0.0814)	(0.0815)	(0.0813)	(0.0814)	(0.0815)	(0.0813)
Sikh	-0.1579	-0.1566	-0.1664	-0.1579	-0.1566	-0.1664	-0.1579	-0.1566	-0.1664	-0.1579	-0.1566	-0.1664
	(0.1525)	(0.1525)	(0.1523)	(0.1525)	(0.1525)	(0.1523)	(0.1525)	(0.1525)	(0.1523)	(0.1525)	(0.1525)	(0.1523)
Any other religion	-0.2220***	-0.2208***	-0.2178***	-0.2220***	-0.2208***	-0.2178***	-0.2220***	-0.2208***	-0.2178***	-0.2220***	-0.2208***	-0.2178***
	(0.0594)	(0.0593)	(0.0593)	(0.0594)	(0.0593)	(0.0593)	(0.0594)	(0.0593)	(0.0593)	(0.0594)	(0.0593)	(0.0593)
Employed	0.0358	0.0364	0.0323	0.0686	0.0688	0.0659	0.1038***	0.1040***	0.0999**	0.0749+	0.0749+	0.0738
	(0.1324)	(0.1325)	(0.1324)	(0.0501)	(0.0501)	(0.0502)	(0.0308)	(0.0307)	(0.0309)	(0.0454)	(0.0454)	(0.0455)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
Self-employed	-0.1613	-0.1616	-0.1619	0.0330	0.0321	0.0413	0.1965***	0.1960***	0.1926***	0.2224***	0.2219***	0.2191***
	(0.1761)	(0.1761)	(0.1765)	(0.0715)	(0.0715)	(0.0720)	(0.0420)	(0.0420)	(0.0420)	(0.0587)	(0.0587)	(0.0586)
Gov. employed training	-0.4794	-0.4815	-0.4808	0.0971	0.0952	0.1075	0.0038	0.0023	0.0137	0.2376	0.2371	0.2254
	(0.3904)	(0.3903)	(0.3904)	(0.2107)	(0.2103)	(0.2104)	(0.1958)	(0.1953)	(0.1933)	(0.3233)	(0.3229)	(0.3204)
Student	-0.6507	-0.6493	-0.6511	-0.3537+	-0.3519+	-0.3540+	0.2214+	0.2224+	0.2186+	0.2640+	0.2647+	0.2608+
	(0.4349)	(0.4353)	(0.4351)	(0.2118)	(0.2120)	(0.2119)	(0.1192)	(0.1191)	(0.1198)	(0.1388)	(0.1389)	(0.1389)
Retired	-0.4041**	-0.4037**	-0.4073**	-0.0601	-0.0593	-0.0622	0.1160**	0.1163**	0.1042*	0.1354*	0.1354*	0.1420*
	(0.1416)	(0.1416)	(0.1430)	(0.0628)	(0.0628)	(0.0633)	(0.0414)	(0.0414)	(0.0419)	(0.0620)	(0.0620)	(0.0625)
Disabled, not working	-1.2519***	-1.2521***	-1.2447***	-1.2516***	-1.2498***	-1.2436***	-1.2685***	-1.2683***	-1.2666***	-1.3641***	-1.3638***	-1.3925***
	(0.1271)	(0.1268)	(0.1266)	(0.0547)	(0.0547)	(0.0549)	(0.0490)	(0.0490)	(0.0490)	(0.1176)	(0.1176)	(0.1193)
Length of time at address:												
12 mths but less than 2 years	-0.0726	-0.0732	-0.0739	-0.0726	-0.0732	-0.0739	-0.0726	-0.0732	-0.0739	-0.0726	-0.0732	-0.0739
	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)	(0.0457)
2 years but less than 3 years	-0.0938*	-0.0938*	-0.0953*	-0.0938*	-0.0938*	-0.0953*	-0.0938*	-0.0938*	-0.0953*	-0.0938*	-0.0938*	-0.0953*
	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)
3 years but less than 5 years	-0.0879*	-0.0883*	-0.0891*	-0.0879*	-0.0883*	-0.0891*	-0.0879*	-0.0883*	-0.0891*	-0.0879*	-0.0883*	-0.0891*
	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)	(0.0410)
5 years but less than 10 years	-0.1051**	-0.1058**	-0.1065**	-0.1051**	-0.1058**	-0.1065**	-0.1051**	-0.1058**	-0.1065**	-0.1051**	-0.1058**	-0.1065**
	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)
10 years or longer	-0.1335***	-0.1343***	-0.1342***	-0.1335***	-0.1343***	-0.1342***	-0.1335***	-0.1343***	-0.1342***	-0.1335***	-0.1343***	-0.1342***
	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)	(0.0367)
Ex-smoker	0.2677***	0.2676***	0.2682***	0.2677***	0.2676***	0.2682***	0.2677***	0.2676***	0.2682***	0.2677***	0.2676***	0.2682***
	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)
Never smoked	0.3490***	0.3492***	0.3495***	0.3490***	0.3492***	0.3495***	0.3490***	0.3492***	0.3495***	0.3490***	0.3492***	0.3495***
	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)
Diff. reg wage	-0.0072		-0.0073	-0.0072		-0.0073	-0.0072		-0.0073	-0.0072		-0.0073
	(0.0070)		(0.0070)	(0.0070)		(0.0070)	(0.0070)		(0.0070)	(0.0070)		(0.0070)
Log regional unem	0.3050		0.2947	0.3050		0.2947	0.3050		0.2947	0.3050		0.2947
	(0.2690)		(0.2689)	(0.2690)		(0.2689)	(0.2690)		(0.2689)	(0.2690)		(0.2689)
Type of Interview	-0.0828	-0.0846	-0.0833	-0.1708***	-0.1724***	-0.1720***	-0.2688***	-0.2703***	-0.2691***	-0.3068***	-0.3081***	-0.3079***

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3	sah_disab1	sah_disab2	sah_disab3
	(0.0556)	(0.0556)	(0.0556)	(0.0315)	(0.0315)	(0.0316)	(0.0226)	(0.0226)	(0.0226)	(0.0302)	(0.0302)	(0.0302)
North West		0.3941**			0.1866*			0.2831***			0.2059*	
		(0.1202)			(0.0900)			(0.0819)			(0.0976)	
Yorkshire and The Humber	0.2279+	0.2364+	0.2259+	0.1966**	0.2044*	0.1946*	0.2351***	0.2428***	0.2322***	0.3057***	0.3136***	0.3018***
	(0.1177)	(0.1214)	(0.1177)	(0.0757)	(0.0815)	(0.0757)	(0.0624)	(0.0693)	(0.0624)	(0.0822)	(0.0877)	(0.0822)
East Midlands	0.2880+	0.2889+	0.2851+	0.2371*	0.2372*	0.2337*	0.1938*	0.1937+	0.1886*	0.1331	0.1330	0.1303
	(0.1470)	(0.1514)	(0.1472)	(0.1056)	(0.1116)	(0.1056)	(0.0941)	(0.1012)	(0.0941)	(0.1118)	(0.1181)	(0.1118)
West Midlands	0.1443	0.1498	0.1437	0.2021*	0.2077*	0.2001*	0.1735*	0.1788*	0.1723*	0.0847	0.0899	0.0830
	(0.1265)	(0.1318)	(0.1266)	(0.0825)	(0.0906)	(0.0825)	(0.0683)	(0.0778)	(0.0683)	(0.0908)	(0.0979)	(0.0910)
East of England	0.3737*	0.2380	0.3673*	0.2327	0.0965	0.2268	0.3597**	0.2236**	0.3552**	0.2994*	0.1634	0.2948*
	(0.1785)	(0.1451)	(0.1785)	(0.1437)	(0.0983)	(0.1437)	(0.1345)	(0.0840)	(0.1345)	(0.1458)	(0.1010)	(0.1458)
London	0.3121**	0.5008*	0.3098**	0.2477***	0.4343*	0.2451***	0.2413***	0.4277*	0.2396***	0.1432+	0.3302	0.1413+
	(0.1141)	(0.2181)	(0.1141)	(0.0740)	(0.2000)	(0.0740)	(0.0595)	(0.1951)	(0.0595)	(0.0814)	(0.2024)	(0.0815)
South East	0.3775*	0.2621*	0.3705*	0.2536	0.1371+	0.2467	0.3798*	0.2629***	0.3730*	0.3294*	0.2124**	0.3243*
	(0.1827)	(0.1162)	(0.1828)	(0.1576)	(0.0701)	(0.1576)	(0.1517)	(0.0556)	(0.1517)	(0.1601)	(0.0760)	(0.1602)
South West	0.3983*	0.2196+	0.3922*	0.3087+	0.1300	0.3023+	0.4314**	0.2517**	0.4250**	0.4245**	0.2448**	0.4171**
	(0.1854)	(0.1311)	(0.1854)	(0.1594)	(0.0905)	(0.1594)	(0.1519)	(0.0772)	(0.1520)	(0.1610)	(0.0944)	(0.1610)
Wales	0.4022***	0.4448***	0.4019***	0.2760**	0.3180**	0.2749**	0.3051***	0.3467***	0.3046***	0.3194***	0.3612***	0.3166***
	(0.1209)	(0.1296)	(0.1210)	(0.0869)	(0.0991)	(0.0870)	(0.0772)	(0.0905)	(0.0772)	(0.0939)	(0.1052)	(0.0940)
Scotland	0.4413***	0.3737*	0.4394***	0.2955**	0.2276+	0.2932**	0.3792***	0.3115*	0.3778***	0.4109***	0.3437*	0.4084***
	(0.1285)	(0.1529)	(0.1286)	(0.0997)	(0.1302)	(0.0997)	(0.0924)	(0.1250)	(0.0924)	(0.1069)	(0.1358)	(0.1069)
Spring	-0.0394	-0.0398	-0.0386	-0.0394	-0.0398	-0.0386	-0.0394	-0.0398	-0.0386	-0.0394	-0.0398	-0.0386
	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)
Summer	0.0418+	0.0414+	0.0422+	0.0418+	0.0414+	0.0422+	0.0418+	0.0414+	0.0422+	0.0418+	0.0414+	0.0422+
	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)
Autumn	-0.0013	-0.0014	-0.0010	-0.0013	-0.0014	-0.0010	-0.0013	-0.0014	-0.0010	-0.0013	-0.0014	-0.0010
	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)	(0.0252)
Wage_st_dev		-0.0038			-0.0038			-0.0038			-0.0038	
		(0.0042)			(0.0042)			(0.0042)			(0.0042)	

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_disab1	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**	**sah_disab1**	**sah_disab2**	**sah_disab3**
Unemp_st_dev		0.0774			0.0774			0.0774			0.0774	
		(0.0556)			(0.0556)			(0.0556)			(0.0556)	
Constant	7.4193***	8.1255***	7.2288***	5.5485***	6.2593***	5.4324***	2.2318***	2.9441***	2.1952***	-0.3550	0.3561	-0.4135
	(0.8345)	(0.5451)	(0.8731)	(0.6955)	(0.3022)	(0.7024)	(0.6583)	(0.2180)	(0.6595)	(0.6718)	(0.2497)	(0.6745)
Observations	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616
ll	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04	-8.42e+04
chi2	19823	19825	20286	19823	19825	20286	19823	19825	20286	19823	19825	20286

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.5 Validity of instrumental variables

3.11.5.1 Life satisfaction, happiness, worthiness, and anxiety – all sample with 3 IVs (2sls) (complete results)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
PIP	-0.1359	0.0381	-0.1336	0.3969	0.5921	0.3907	-0.5040	-0.2067	-0.4998	0.0118	0.3740	0.0202
	(0.5221)	(0.4236)	(0.5203)	(0.7264)	(0.5928)	(0.7338)	(0.8287)	(0.7047)	(0.8301)	(0.5182)	(0.4180)	(0.5109)
Disab (IV)	-0.6341+	-0.6422+	-0.7289	-0.0151	-0.0381	0.2418	0.2343	0.2065	0.0619	-0.3737	-0.4081	-0.8241
	(0.3326)	(0.3305)	(0.4457)	(0.4688)	(0.4619)	(0.6116)	(0.5911)	(0.5893)	(0.7888)	(0.3723)	(0.3771)	(0.5169)
*PIP*Disab (IV)*	-0.6291	-0.4904	-0.6235	-0.7388	-0.6416	-0.7541	0.3676	0.2691	0.3778	-0.2719	-0.2802	-0.2419
	(0.6059)	(0.6109)	(0.6043)	(0.8617)	(0.8485)	(0.8704)	(1.0037)	(0.9807)	(1.0098)	(0.6387)	(0.6449)	(0.6312)
Benefits	-0.2699	-0.2557	-0.2623	-0.2140	-0.2103	-0.2346	-0.6597	-0.6576	-0.6459	0.2987	0.3028	0.3373
	(0.2425)	(0.2398)	(0.2457)	(0.3246)	(0.3212)	(0.3297)	(0.4053)	(0.4017)	(0.4075)	(0.2317)	(0.2312)	(0.2355)
First regions	0.2864	-0.1386	0.2834	-0.2024	0.2488	-0.1943	-0.6719	-0.2954	-0.6774	0.1219	.	.
	(0.8473)	(0.9248)	(0.8473)	(1.1691)	(1.2977)	(1.1726)	(1.3325)	(1.5410)	(1.3327)	(0.8734)	.	.
Married	0.5547**	0.5077**	0.5530**	0.1002	0.0993	0.1049	-0.0721	-0.0573	-0.0753	0.4115*	0.4070+	0.4063+
	(0.2022)	(0.1951)	(0.2024)	(0.2846)	(0.2887)	(0.2843)	(0.3582)	(0.3638)	(0.3574)	(0.2069)	(0.2083)	(0.2081)
Female	-0.1732	-0.2420	-0.2933	-0.0477	-0.0692	0.2776	0.8765*	0.8898*	0.6581	-0.0599	-0.0831	-0.6263
	(0.2293)	(0.2323)	(0.4015)	(0.3065)	(0.3091)	(0.5583)	(0.3622)	(0.3649)	(0.6749)	(0.2228)	(0.2299)	(0.3888)
*Female*Disab (IV)*			0.1960			-0.5309			0.3564			0.9227+
			(0.5363)			(0.7447)			(0.9243)			(0.5585)
Age	-0.0004	0.0002	0.0022	0.0372	0.0348	0.0303	0.0427	0.0457	0.0473	0.0603	0.0605	0.0723
	(0.0695)	(0.0695)	(0.0702)	(0.1024)	(0.1034)	(0.1027)	(0.1196)	(0.1188)	(0.1215)	(0.0909)	(0.0904)	(0.0908)
Age squared	-0.0003	-0.0003	-0.0004	-0.0006	-0.0006	-0.0005	-0.0004	-0.0004	-0.0005	-0.0009	-0.0009	-0.0010
	(0.0009)	(0.0009)	(0.0009)	(0.0013)	(0.0013)	(0.0013)	(0.0015)	(0.0015)	(0.0015)	(0.0011)	(0.0011)	(0.0011)
Higher educ	-0.0137	0.0899	-0.0149	0.0287	0.0460	0.0319	-0.4582	-0.5413	-0.4604	-0.0371	-0.0488	-0.0393
	(0.3522)	(0.3297)	(0.3528)	(0.4429)	(0.4396)	(0.4428)	(0.6217)	(0.6225)	(0.6213)	(0.3260)	(0.3170)	(0.3243)
GCE, A-level or equivalent	-0.0376	-0.0447	-0.0376	-0.0054	-0.0121	-0.0055	-0.8380	-0.8653+	-0.8380	-0.3843	-0.4056	-0.3814
	(0.3276)	(0.3333)	(0.3288)	(0.4476)	(0.4516)	(0.4458)	(0.5123)	(0.5119)	(0.5111)	(0.3090)	(0.3128)	(0.3101)
GCSE grades A-C or equivalent*	0.3853	0.4521	0.3849	-0.7062	-0.7178	-0.7050	-0.3108	-0.3811	-0.3117	-0.2949	-0.3240	-0.2946
	(0.4943)	(0.5144)	(0.4965)	(0.5963)	(0.5940)	(0.5943)	(0.6766)	(0.6620)	(0.6767)	(0.4084)	(0.4201)	(0.4067)
Other qualifications	-0.1197	-0.0793	-0.1248	-0.1166	-0.1266	-0.1028	-0.4110	-0.4858	-0.4203	-1.2053*	-1.2460*	-1.2268*
	(0.7549)	(0.8020)	(0.7578)	(0.8607)	(0.8729)	(0.8611)	(0.8845)	(0.8687)	(0.8841)	(0.5992)	(0.6269)	(0.5949)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Educ_squared	-0.0051	-0.0101	-0.0048	0.0371	0.0363	0.0363	-0.0484	-0.0445	-0.0479	0.0150	0.0155	0.0164
	(0.0306)	(0.0323)	(0.0307)	(0.0321)	(0.0325)	(0.0321)	(0.0351)	(0.0341)	(0.0351)	(0.0210)	(0.0223)	(0.0211)
Age_left_FT_educ	-0.0719	-0.0480	-0.0703	-0.1254	-0.1151	-0.1297	0.2390	0.2324	0.2419	0.0067	0.0146	0.0135
	(0.1305)	(0.1266)	(0.1291)	(0.1351)	(0.1335)	(0.1371)	(0.1709)	(0.1674)	(0.1737)	(0.1489)	(0.1482)	(0.1432)
Age_left_educ_squared	0.0003	-0.0003	0.0003	0.0038	0.0035	0.0039	-0.0097+	-0.0095+	-0.0097+	-0.0016	-0.0019	-0.0017
	(0.0039)	(0.0038)	(0.0038)	(0.0039)	(0.0039)	(0.0040)	(0.0051)	(0.0050)	(0.0052)	(0.0044)	(0.0044)	(0.0043)
House or bungalow - semi detached	0.6242	0.7312+	0.6193	0.0697	0.1296	0.0830	1.1245+	1.0862+	1.1156+	0.1213	0.1669	0.1033
	(0.3916)	(0.3805)	(0.3920)	(0.4698)	(0.4621)	(0.4680)	(0.6128)	(0.5926)	(0.6113)	(0.3292)	(0.3344)	(0.3296)
Terraced	-0.0565	0.0486	-0.0839	0.1959	0.1576	0.2702	-0.0349	-0.3436	-0.0847	0.7016	0.5352	0.5841
	(1.8576)	(1.7785)	(1.8595)	(1.5890)	(1.5542)	(1.6377)	(2.0495)	(1.9109)	(2.1028)	(1.4322)	(1.4641)	(1.3643)
Flatmaisonette - purpose built	0.6078	0.7641+	0.5941	-0.2470	-0.1841	-0.2099	0.7501	0.6905	0.7252	0.0349	0.0857	-0.0226
	(0.4110)	(0.4022)	(0.4123)	(0.5257)	(0.5271)	(0.5318)	(0.6648)	(0.6575)	(0.6660)	(0.3630)	(0.3639)	(0.3572)
Flatmaiste - part hseconverted hse	0.4693	0.6205	0.4469	0.2346	0.2380	0.2954	-1.7801	-1.8934	-1.8208	-0.6054	-0.6254	-0.7031
	(0.6300)	(0.6858)	(0.6364)	(1.0976)	(1.1012)	(1.0699)	(1.6037)	(1.5639)	(1.6406)	(0.5581)	(0.5777)	(0.4987)
Gypsy, Traveller/Irish Traveller	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Mixed / Multiple ethnic groups	-0.2406	-0.3446	-0.2477	1.5742*	1.4456*	1.5934*	-0.8394	-0.8085	-0.8523	-0.1861	-0.2625	-0.2160
	(0.6916)	(0.6000)	(0.6903)	(0.6140)	(0.6259)	(0.6185)	(1.0710)	(0.9952)	(1.0792)	(0.4858)	(0.4726)	(0.4729)
Indian	0.2228	0.2250	0.2256	-0.0422	-0.0497	-0.0498	-0.8482	-0.8059	-0.8432	-1.4312	-1.4093	-1.4172
	(1.3740)	(1.4568)	(1.3677)	(1.7126)	(1.6823)	(1.7528)	(1.3888)	(1.2879)	(1.4085)	(1.1168)	(1.1844)	(1.0698)
Pakistani	1.1162	1.1081	1.1062	1.7502	1.6601	1.7772	-3.4327*	-3.3760*	-3.4509*	-0.7713	-0.7766	-0.8204
	(2.1576)	(2.2560)	(2.1542)	(1.2565)	(1.3546)	(1.2760)	(1.4192)	(1.4487)	(1.4357)	(1.4530)	(1.5279)	(1.4052)
Bangladeshi	3.4316*	3.5944*	3.3809*	2.7357+	2.5939	2.8730+	9.9661***	9.8251***	9.8739***	0.2441	0.1402	-0.0090
	(1.5757)	(1.5357)	(1.5887)	(1.6122)	(1.5961)	(1.6397)	(2.2088)	(2.1473)	(2.2362)	(1.7663)	(1.7708)	(1.7307)
Chinese	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Any other Asian background	-0.0271	-0.1924	-0.0881	-0.9250	-0.9390	-0.7598	-0.6596	-0.5981	-0.7705	-1.4966	-1.5200	-1.7896
	(1.2322)	(1.3532)	(1.2555)	(1.4545)	(1.4598)	(1.4901)	(1.5223)	(1.5189)	(1.5710)	(1.1126)	(1.1323)	(1.1314)
Black/ African/Caribbean/Black British	-0.7848	-0.8837	-0.7763	0.9419	0.8865	0.9191	0.5921	0.6066	0.6074	-1.1855*	-1.2325*	-1.1457*

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.6096)	(0.5826)	(0.6097)	(0.8150)	(0.8558)	(0.8262)	(1.2831)	(1.3071)	(1.2962)	(0.5602)	(0.5675)	(0.5533)
Arab	2.4684*	1.9685+	2.4172*	2.3207	2.2205	2.4596	-2.2671	-1.8769	-2.3603	2.2351+	2.2530*	1.9861+
	(1.1678)	(1.0916)	(1.1733)	(1.9349)	(1.9668)	(1.9585)	(2.0944)	(2.1345)	(2.1255)	(1.1772)	(1.1412)	(1.1489)
Other ethnic group	-1.9455	-2.4749+	-1.9874	-1.0522	-1.3492	-0.9386	0.0440	0.4167	-0.0322	-2.1620	-2.2283	-2.3586
	(1.2273)	(1.3483)	(1.2422)	(1.0308)	(1.0578)	(1.0570)	(0.8814)	(1.0450)	(0.8905)	(1.5886)	(1.5308)	(1.6180)
Christian (all denominations)	0.0523	0.0858	0.0578	-0.0752	-0.0699	-0.0901	-0.2908	-0.3464	-0.2808	-0.0787	-0.1013	-0.0528
	(0.2269)	(0.2231)	(0.2276)	(0.3192)	(0.3183)	(0.3165)	(0.3865)	(0.3869)	(0.3871)	(0.2434)	(0.2446)	(0.2415)
Buddhist	1.7157+	1.5340	1.7616+	0.5896	0.5417	0.4652	0.7524	0.8275	0.8360	1.0314	1.0165	1.2562
	(0.9965)	(0.9588)	(1.0059)	(2.3490)	(2.3019)	(2.3641)	(2.4415)	(2.4854)	(2.4571)	(0.7934)	(0.7360)	(0.7993)
Hindu	-1.1210	-1.0429	-1.1511	0.8439	0.8360	0.9254	0.6026	0.4690	0.5479	0.2286	0.1807	0.0871
	(1.5432)	(1.6721)	(1.5431)	(1.8142)	(1.7980)	(1.8571)	(1.7269)	(1.6618)	(1.7439)	(1.3165)	(1.3619)	(1.2811)
Jewish	-0.4487	-0.7358	-0.4067	-0.5007	-0.5970	-0.6145	3.1648***	3.3046***	3.2413***	-2.0169*	-2.0757*	-1.8164+
	(0.7987)	(0.7933)	(0.8049)	(0.9439)	(0.8896)	(0.9683)	(0.8300)	(0.7680)	(0.8769)	(0.9704)	(0.8777)	(0.9867)
Muslim	0.4686	0.7094	0.5013	0.9202	1.0132	0.8315	0.8490	0.5519	0.9085	0.5100	0.4473	0.6648
	(1.0114)	(1.0273)	(1.0232)	(0.9273)	(0.9395)	(0.9348)	(1.1803)	(1.2165)	(1.1973)	(0.6149)	(0.6472)	(0.6136)
Sikh	0.4151	0.5010	0.4322	1.7494	1.8216	1.7032	-2.4343	-2.5977+	-2.4033	0.9787	0.9422	1.0574
	(1.4890)	(1.5283)	(1.4945)	(1.9483)	(1.9649)	(2.0249)	(1.5499)	(1.4822)	(1.5640)	(1.2108)	(1.2878)	(1.2384)
Any other religion	-1.0522	-0.9131	-1.0350	0.0158	0.0180	-0.0307	-0.8148	-0.9429	-0.7836	-1.2949+	-1.3345+	-1.2115+
	(0.6502)	(0.5943)	(0.6477)	(1.0518)	(1.0894)	(1.0506)	(0.9022)	(0.9898)	(0.8985)	(0.7010)	(0.6920)	(0.6764)
Employed	1.0288*	0.9066	1.0361*	-0.6803	0.7737	-0.7002	-0.1097	-1.4001	-0.0963	1.1834	0.4926	1.3000
	(0.4931)	(1.0597)	(0.4930)	(0.6240)	(1.2812)	(0.6299)	(0.6383)	(1.9572)	(0.6336)	(1.2181)	(0.5101)	(1.1522)
Self-employed	.	-0.1611	.	.	1.4349	.	.	-1.2879	.	0.7124	.	0.7972
	.	(1.1488)	.	.	(1.4189)	.	.	(2.0437)	.	(1.3446)	.	(1.2825)
Gov. employed training	-0.0377	.	-0.0555	-1.5327	.	-1.4845	1.7119	.	1.6795	.	-0.8455	.
	(1.1260)	.	(1.1161)	(1.4357)	.	(1.4666)	(2.0792)	.	(2.1081)	.	(1.3775)	.
Student	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Retired	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Disabled, not working	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Length of time at address:												
12 mths but less than 2 years	-0.2016	-0.2735	-0.2174	-0.0418	-0.0725	0.0011	0.2248	0.2902	0.1960	-0.8493+	-0.8414+	-0.9229+
	(0.4280)	(0.4165)	(0.4289)	(0.6922)	(0.6891)	(0.6934)	(0.7913)	(0.7938)	(0.7909)	(0.5002)	(0.4875)	(0.5001)
2 years but less than 3 years	-0.0671	-0.0522	-0.0836	0.0605	0.0523	0.1052	0.8630	0.8807	0.8330	0.1933	0.2093	0.1092
	(0.3713)	(0.3700)	(0.3773)	(0.5553)	(0.5610)	(0.5539)	(0.6656)	(0.6725)	(0.6636)	(0.3867)	(0.3858)	(0.3897)
3 years but less than 5 years	-0.5925+	-0.5336+	-0.6120+	0.2622	0.2610	0.3152	0.4689	0.4251	0.4333	-0.6213+	-0.6303+	-0.7121*
	(0.3249)	(0.3205)	(0.3323)	(0.5597)	(0.5553)	(0.5612)	(0.6119)	(0.6076)	(0.6125)	(0.3481)	(0.3485)	(0.3475)
5 years but less than 10 years	-0.2604	-0.2219	-0.2763	0.3507	0.3429	0.3939	0.4228	0.4088	0.3938	-0.4163	-0.4131	-0.4892
	(0.4140)	(0.4119)	(0.4188)	(0.5575)	(0.5588)	(0.5568)	(0.6332)	(0.6340)	(0.6308)	(0.4562)	(0.4576)	(0.4553)
10 years or longer	-0.1474	-0.2078	-0.1597	-0.1513	-0.1908	-0.1179	1.1365+	1.1619+	1.1141+	-0.3341	-0.3470	-0.3887
	(0.3665)	(0.3606)	(0.3713)	(0.5640)	(0.5633)	(0.5652)	(0.6160)	(0.6197)	(0.6094)	(0.3778)	(0.3778)	(0.3740)
Ex-smoker	0.8177**	0.8756**	0.8210**	0.4386	0.4613	0.4298	-0.3348	-0.3392	-0.3289	0.6275*	0.6534*	0.6407*
	(0.2675)	(0.2652)	(0.2679)	(0.3834)	(0.3804)	(0.3838)	(0.4401)	(0.4397)	(0.4405)	(0.2953)	(0.2913)	(0.2959)
Never smoked	0.7452**	0.8449**	0.7443**	0.3688	0.4129	0.3713	-0.2277	-0.2414	-0.2294	0.6695*	0.7121*	0.6655*
	(0.2810)	(0.2773)	(0.2815)	(0.3943)	(0.3920)	(0.3929)	(0.4660)	(0.4692)	(0.4655)	(0.2928)	(0.2836)	(0.2896)
Diff. reg wage	0.1182		0.1185	0.0587		0.0579	-0.0310		-0.0305	0.0547		0.0562
	(0.0991)		(0.0991)	(0.1240)		(0.1240)	(0.1415)		(0.1418)	(0.1159)		(0.1134)
Log regional unem	-4.1774		-4.1472	-2.8523		-2.9343	-0.2717		-0.2167	-2.7302		-2.6107
	(3.3664)		(3.3699)	(4.2711)		(4.3048)	(5.3593)		(5.3704)	(3.1879)		(3.1782)
Face-to-face interview	-0.1680	-0.1272	-0.1630	0.0191	0.0304	0.0055	0.8086+	0.7810+	0.8177+	-0.1943	-0.1927	-0.1717
	(0.2523)	(0.2518)	(0.2537)	(0.3429)	(0.3446)	(0.3407)	(0.4295)	(0.4259)	(0.4300)	(0.2611)	(0.2648)	(0.2616)
North West	.	.	.	.	.	.	.	.	.	.	0.4648	0.1041
	.	.	.	.	.	.	.	.	.	.	(0.9574)	(0.8670)
Yorkshire and The Humber	-0.0967	-0.5523	-0.0981	-0.9275	-0.6838	-0.9236	0.0079	0.4372	0.0053	0.3949	0.6577	0.3866
	(0.6464)	(0.6831)	(0.6466)	(0.9510)	(1.0187)	(0.9538)	(1.0748)	(1.2350)	(1.0755)	(0.6915)	(0.7432)	(0.6876)
East Midlands	-0.4772	-0.9735	-0.4767	0.0612	0.6967	0.0597	-1.2057	-0.5400	-1.2047	0.0702	0.6674	0.0662
	(1.0741)	(1.0879)	(1.0748)	(1.4526)	(1.5262)	(1.4565)	(1.7567)	(1.9185)	(1.7566)	(1.0760)	(1.1289)	(1.0707)
West Midlands	-0.5871	-1.3141+	-0.5980	-0.2282	-0.0321	-0.1987	0.2954	0.9739	0.2756	0.7148	1.0219	0.6600
	(0.7184)	(0.7688)	(0.7194)	(1.0389)	(1.1506)	(1.0408)	(1.1897)	(1.4441)	(1.1907)	(0.7409)	(0.8017)	(0.7365)
East of England	-0.6996	-0.7361	-0.6905	-1.3711	-0.5418	-1.3958	0.3305	1.8647	0.3471	-0.2637	1.0704	-0.2300
	(1.6465)	(0.8840)	(1.6467)	(2.1922)	(1.3719)	(2.2006)	(2.6824)	(1.7198)	(2.6864)	(1.5996)	(1.0383)	(1.5913)

Variable	ls_iv1	ls_iv2	ls_iv3	happy_iv1	happy_iv2	happy_iv3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
London	0.5747	4.8305*	0.5738	-0.4731	1.3176	-0.4706	0.6015	-3.8242	0.5998	1.1461	0.5170	1.1384
	(0.6661)	(2.3518)	(0.6658)	(0.9745)	(3.2620)	(0.9787)	(1.1807)	(3.6182)	(1.1835)	(0.7113)	(2.4301)	(0.7082)
South East	-1.7470	0.4730	-1.7282	-2.1628	-0.5689	-2.2138	0.6845	0.4968	0.7188	-0.9288	0.3531	-0.8522
	(1.9015)	(0.5562)	(1.9048)	(2.4729)	(0.8087)	(2.4894)	(2.9734)	(0.9376)	(2.9798)	(1.8026)	(0.5821)	(1.7943)
South West	-1.5625	-0.9521	-1.5492	-1.2920	-0.2329	-1.3280	0.3577	1.8398	0.3818	-0.4899	1.0980	-0.4433
	(1.8941)	(0.7890)	(1.8955)	(2.4193)	(1.0994)	(2.4295)	(2.9694)	(1.3664)	(2.9688)	(1.8003)	(0.8558)	(1.7936)
Wales	-0.2793	0.2350	-0.2699	-0.7398	0.1713	-0.7653	-0.2883	-0.6770	-0.2711	-0.3699	0.0257	-0.3301
	(0.9580)	(1.1371)	(0.9606)	(1.2519)	(1.4336)	(1.2547)	(1.5006)	(1.7813)	(1.5017)	(0.9981)	(1.1931)	(0.9888)
Scotland	-0.9012	-2.8723*	-0.8905	-0.7504	-0.6102	-0.7794	0.5548	2.8182	0.5742	-0.4538	0.4634	-0.4100
	(1.1245)	(1.3034)	(1.1269)	(1.5166)	(2.0462)	(1.5235)	(1.7707)	(2.5353)	(1.7726)	(1.1025)	(1.3887)	(1.0947)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Spring	0.0496	0.0378	0.0481	0.0224	0.0423	0.0265	-0.0834	-0.0712	-0.0862	0.0133	0.0295	0.0056
	(0.2768)	(0.2789)	(0.2783)	(0.4043)	(0.4006)	(0.4043)	(0.4849)	(0.4814)	(0.4838)	(0.3020)	(0.2972)	(0.3025)
Summer	-0.1997	-0.1708	-0.2067	0.0298	0.0403	0.0490	-0.0870	-0.1008	-0.0999	-0.2756	-0.2674	-0.3091
	(0.2780)	(0.2737)	(0.2785)	(0.3870)	(0.3865)	(0.3904)	(0.4762)	(0.4664)	(0.4779)	(0.3104)	(0.3083)	(0.3117)
Autumn	-0.0402	-0.0265	-0.0383	-0.5535	-0.5299	-0.5589	0.2774	0.3172	0.2810	-0.1064	-0.0648	-0.1002
	(0.2992)	(0.2952)	(0.2995)	(0.4373)	(0.4315)	(0.4344)	(0.5066)	(0.4972)	(0.5069)	(0.3015)	(0.3003)	(0.3015)
wage_st_dev		-0.1032*			-0.0352			0.1052			0.0178	
		(0.0498)			(0.0673)			(0.0795)			(0.0521)	
unemp_st_dev		-0.1204			0.2345			-0.4928			-0.1942	
		(0.6973)			(0.8702)			(1.0929)			(0.7180)	
Constant	15.8123+	9.7065***	15.7322+	13.5674	6.2345	13.7842	0.5753	-1.5816	0.4297	11.1962	5.1486+	10.7881
	(8.5346)	(2.7908)	(8.5398)	(10.6581)	(3.8379)	(10.7404)	(12.9906)	(4.5986)	(13.0356)	(8.2622)	(2.7270)	(8.1816)
Observations	433	433	433	433	433	433	433	433	433	434	434	434
R-squared	0.26	0.26	0.26	0.13	0.13	0.13	0.18	0.18	0.18	0.17	0.17	0.18
ll	-832.656	-832.076	-832.564	-974.251	-974.606	-973.898	-1056.058	-1054.983	-1055.949	-843.133	-843.711	-841.146

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.5.2 Self-assessed health – all sample with 3 IVs (Ologit[16]) (complete results)

Variable	sah_3iv1	sah_3iv2	sah_3iv3
PIP	-0.0346	-0.1760	-0.0683
	(0.5621)	(0.4539)	(0.5696)
Disab (IV)	-1.5910***	-1.6630***	-0.9610*
	(0.4132)	(0.4159)	(0.4665)
*PIP*Disab (IV)*	-0.2889	-0.1493	-0.2576
	(0.7737)	(0.7523)	(0.7688)
Benefits	-0.7050*	-0.6837*	-0.7624**
	(0.2820)	(0.2807)	(0.2812)
First regions	-0.1066	-1.4308	-0.0494
	(1.0254)	(1.1442)	(1.0340)
Married	-0.2965	-0.3362	-0.2837
	(0.2556)	(0.2561)	(0.2522)
Female	-0.0058	-0.0351	0.8547+
	(0.2673)	(0.2637)	(0.4516)
*Female*Disab (IV)*			-1.4232*
			(0.6873)
Age	0.0769	0.0882	0.0583
	(0.0809)	(0.0829)	(0.0790)
Age squared	-0.0011	-0.0012	-0.0008
	(0.0010)	(0.0011)	(0.0010)
Higher educ	0.1749	0.2432	0.1915
	(0.3702)	(0.3718)	(0.3733)
GCE, A-level or equivalent	-0.6987+	-0.7406+	-0.7187+
	(0.3990)	(0.4035)	(0.3948)
GCSE grades A-C or equivalent*	-0.5856	-0.5689	-0.6429
	(0.4692)	(0.4649)	(0.4709)
Other qualifications	0.6517	0.6238	0.6459
	(0.4858)	(0.4889)	(0.5041)
No qualification	0.5854	0.4547	0.5108
	(0.7663)	(0.7605)	(0.7526)
Educ_squared	.	.	.
	.	.	.
Age_left_FT_educ	-0.1397	-0.1366	-0.1508
	(0.1103)	(0.1078)	(0.1230)
Age_left_educ_squared	0.0049	0.0049	0.0051
	(0.0037)	(0.0036)	(0.0040)
House or bungalow - semi detached	0.4943	0.5153	0.5040
	(0.3917)	(0.3825)	(0.3850)
Terraced	1.2832	1.2802	1.3772
	(0.8731)	(0.9589)	(1.0254)
Flatmaisonette - purpose built	-0.0629	0.0076	-0.0085
	(0.4171)	(0.4185)	(0.4148)
Flatmaiste - part	-2.2844	-2.0890	-2.1312

[16] This robustness check has been estimated with ologit instead of gologit, as the latter specification does not converge.

Variable	sah_3iv1	sah_3iv2	sah_3iv3
hseconverted hse			
	(1.6747)	(1.7720)	(1.3400)
Gypsy, Traveller/Irish Traveller	.	.	.
	.	.	.
Mixed / Multiple ethnic groups	1.3243*	1.5052*	1.3877*
	(0.6220)	(0.6120)	(0.5942)
Indian	-0.6864	-0.6419	-0.7651
	(1.7808)	(1.7800)	(1.8706)
Pakistani	-0.7037	-0.5178	-0.6446
	(1.1894)	(1.1085)	(1.2892)
Bangladeshi	-4.6219*	-4.3165*	-4.3652*
	(1.8063)	(1.8176)	(1.8852)
Chinese	.	.	.
	.	.	.
Any other Asian background	-3.4297**	-3.6065**	-3.0604*
	(1.2696)	(1.2358)	(1.2819)
Black/ African/Caribbean/Black British	-0.6650	-0.6653	-0.7258
	(0.5189)	(0.5322)	(0.5064)
Arab	21.4844***	21.3402***	26.0489***
	(1.4503)	(1.5095)	(1.4586)
Other ethnic group	-2.3283**	-2.2798*	-2.0961**
	(0.7976)	(0.8877)	(0.7486)
Christian (all denominations)	0.3813	0.3758	0.3361
	(0.2670)	(0.2662)	(0.2638)
Buddhist	0.4046	0.2246	0.0526
	(0.9893)	(0.9294)	(1.0090)
Hindu	0.1496	0.1317	0.3396
	(1.6950)	(1.6992)	(1.7623)
Jewish	-1.6198	-1.5654	-1.9607+
	(1.1406)	(1.1112)	(1.1784)
Muslim	1.5083*	1.4631*	1.3099*
	(0.5886)	(0.5902)	(0.5950)
Sikh	0.9279	0.7408	0.8343
	(1.8511)	(1.8544)	(1.9754)
Any other religion	-0.0281	0.1199	-0.1884
	(0.7649)	(0.8591)	(0.7176)
Employed	-1.1330	-1.0665	-1.3299
	(0.9844)	(0.8765)	(0.8678)
Self-employed	-2.2885*	-2.1956*	-2.4792*
	(1.0790)	(0.9764)	(0.9811)
Gov. employed training	.	.	.
	.	.	.
Student	.	.	.
	.	.	.

Variable	sah_3iv1	sah_3iv2	sah_3iv3
Retired	.	.	.
	.	.	.
Disabled, not working	.	.	.
	.	.	.
Length of time at address: 12 mths but less than 2 years	0.5234	0.4924	0.6289
	(0.6138)	(0.6110)	(0.6222)
2 years but less than 3 years	0.2331	0.2347	0.3626
	(0.5163)	(0.4951)	(0.5362)
3 years but less than 5 years	-1.0578*	-1.0341*	-0.9282+
	(0.4977)	(0.4879)	(0.5014)
5 years but less than 10 years	-0.5852	-0.5549	-0.4676
	(0.4934)	(0.4948)	(0.5095)
10 years or longer	-0.6739	-0.7255	-0.5890
	(0.4959)	(0.4913)	(0.5026)
Ex-smoker	0.3220	0.3749	0.3160
	(0.3224)	(0.3295)	(0.3203)
Never smoked	0.4397	0.5037+	0.4416
	(0.3013)	(0.3002)	(0.2972)
Diff. reg wage	-0.0437		-0.0440
	(0.1144)		(0.1129)
Log regional unem	-1.1663		-1.2467
	(3.5235)		(3.4996)
Face-to-face interview	-0.2649	-0.2546	-0.2773
	(0.2918)	(0.2915)	(0.2898)
North West	.	.	.
	.	.	.
Yorkshire and The Humber	-0.1202	-1.0652	-0.1077
	(0.8790)	(0.9689)	(0.8933)
East Midlands	-0.5645	-2.3242+	-0.5183
	(1.2266)	(1.3878)	(1.2387)
West Midlands	0.5931	-0.4987	0.7324
	(0.9104)	(1.0240)	(0.9415)
East of England	0.5778	-0.0268	0.6151
	(1.8538)	(1.2422)	(1.8654)
London	-0.6086	-0.7209	-0.5648
	(0.8488)	(2.7122)	(0.8629)
South East	-0.5561	-0.3211	-0.5917
	(2.0431)	(0.7669)	(2.0422)
South West	-0.9112	-0.9592	-0.9077
	(1.9664)	(0.9843)	(1.9760)
Wales	-0.6107	-2.0833	-0.6371
	(1.0710)	(1.3204)	(1.0808)
Scotland	-0.0484	-1.9596	-0.0548
	(1.2600)	(1.7185)	(1.2752)
Northern Ireland	.	.	.

Variable	sah_3iv1	sah_3iv2	sah_3iv3
	.	.	.
Spring	-0.1698	-0.2531	-0.1585
	(0.3394)	(0.3467)	(0.3341)
Summer	-0.1911	-0.2028	-0.1335
	(0.3640)	(0.3641)	(0.3656)
Autumn	-0.6363+	-0.6630+	-0.6572+
	(0.3556)	(0.3520)	(0.3485)
wage_st_dev		-0.0148	
		(0.0581)	
unemp_st_dev		-1.1828	
		(0.7631)	
cut1			
Constant	-10.5069	-9.8986**	-10.9596
	(8.5907)	(3.1970)	(8.5987)
cut2			
Constant	-8.8034	-8.1886**	-9.2243
	(8.5788)	(3.1417)	(8.5892)
cut3			
Constant	-6.0908	-5.4694+	-6.4844
	(8.5637)	(3.1256)	(8.5791)
cut4			
Constant	-3.1780	-2.5482	-3.5373
	(8.5706)	(3.1228)	(8.5863)
Observations	435	435	435
ll	-8.59e+04	-8.57e+04	-8.52e+04
chi2	.	.	.

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.6 Different IV estimations: 2SLS, LIML, GMM

3.11.6.1 Life satisfaction

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
Disabled	-0.5820***	-0.7707***	-0.7711***	-0.7672***	-0.5818***	-0.7702***	-0.7707***	-0.7662***
	(0.0128)	(0.0302)	(0.0302)	(0.0301)	(0.0128)	(0.0302)	(0.0302)	(0.0302)
PIP	0.0849***	-0.0277	-0.0277	-0.0235	0.1017***	0.0276	0.0276	0.0274
	(0.0174)	(0.0343)	(0.0343)	(0.0343)	(0.0121)	(0.0236)	(0.0236)	(0.0236)
Benefits	-0.1209***	-0.1344***	-0.1344***	-0.1350***	-0.1208***	-0.1348***	-0.1347***	-0.1345***
	(0.0107)	(0.0201)	(0.0201)	(0.0201)	(0.0107)	(0.0202)	(0.0202)	(0.0202)
First regions	-0.0485	-0.1217+	-0.1217+	-0.1140	-0.0336	-0.0327	-0.0327	-0.0293
	(0.0359)	(0.0695)	(0.0695)	(0.0695)	(0.0403)	(0.0789)	(0.0789)	(0.0789)
Married	0.6335***	0.7206***	0.7206***	0.7190***	0.6337***	0.7208***	0.7208***	0.7192***
	(0.0104)	(0.0199)	(0.0199)	(0.0199)	(0.0104)	(0.0199)	(0.0199)	(0.0199)
Female	0.1718***	0.1582***	0.1582***	0.1577***	0.1720***	0.1585***	0.1585***	0.1577***
	(0.0099)	(0.0189)	(0.0189)	(0.0189)	(0.0099)	(0.0189)	(0.0189)	(0.0189)
Age	-0.0909***	-0.0981***	-0.0981***	-0.0985***	-0.0909***	-0.0982***	-0.0982***	-0.0989***
	(0.0026)	(0.0053)	(0.0053)	(0.0053)	(0.0026)	(0.0053)	(0.0053)	(0.0053)
Age squared	0.0010***	0.0011***	0.0011***	0.0011***	0.0010***	0.0011***	0.0011***	0.0011***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.0122	0.0210	0.0210	0.0184	-0.0123	0.0208	0.0208	0.0189
	(0.0151)	(0.0305)	(0.0305)	(0.0305)	(0.0151)	(0.0305)	(0.0305)	(0.0305)
GCE, A-level or equivalent	-0.0169	-0.0202	-0.0202	-0.0207	-0.0168	-0.0208	-0.0207	-0.0217
	(0.0125)	(0.0274)	(0.0274)	(0.0274)	(0.0125)	(0.0274)	(0.0274)	(0.0274)
GCSE grades A-C or equivalent*	-0.0482***	-0.0604*	-0.0604*	-0.0568*	-0.0484***	-0.0612*	-0.0612*	-0.0562*
	(0.0136)	(0.0286)	(0.0286)	(0.0286)	(0.0136)	(0.0286)	(0.0286)	(0.0286)
Other qualifications	0.0107	0.0385	0.0385	0.0350	0.0104	0.0379	0.0379	0.0335
	(0.0205)	(0.0367)	(0.0367)	(0.0367)	(0.0205)	(0.0367)	(0.0367)	(0.0367)
No qualification	.	0.0525	0.0526	0.0535	.	0.0518	0.0518	0.0521
	.	(0.0389)	(0.0389)	(0.0389)	.	(0.0389)	(0.0389)	(0.0389)
Educ_squared	-0.0005	.	.	.	-0.0005	.	.	.
	(0.0006)	.	.	.	(0.0006)	.	.	.
Age_left_FT_educ	-0.0233***	-0.0075	-0.0075	-0.0078	-0.0233***	-0.0075	-0.0075	-0.0076
	(0.0037)	(0.0081)	(0.0081)	(0.0081)	(0.0037)	(0.0081)	(0.0081)	(0.0081)
Age_left_educ_squared	0.0007***	0.0002	0.0002	0.0002	0.0007***	0.0003	0.0003	0.0002
	(0.0001)	(0.0003)	(0.0003)	(0.0003)	(0.0001)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.1741***	-0.2423***	-0.2423***	-0.2430***	-0.1742***	-0.2419***	-0.2419***	-0.2421***
	(0.0125)	(0.0226)	(0.0226)	(0.0226)	(0.0125)	(0.0226)	(0.0226)	(0.0226)
Terraced	-0.3309***	-0.3903**	-0.3903**	-0.3917**	-0.3310***	-0.3889**	-0.3889**	-0.3893**
	(0.0617)	(0.1206)	(0.1206)	(0.1205)	(0.0617)	(0.1207)	(0.1207)	(0.1206)
Flatmaisonette - purpose built	-0.3393***	-0.3325***	-0.3325***	-0.3329***	-0.3393***	-0.3316***	-0.3316***	-0.3322***
	(0.0154)	(0.0274)	(0.0274)	(0.0274)	(0.0154)	(0.0274)	(0.0274)	(0.0274)
Flatmaiste - part hseconverted hse	-0.1098*	-0.1013	-0.1013	-0.1027	-0.1107*	-0.1017	-0.1016	-0.0986
	(0.0545)	(0.1105)	(0.1105)	(0.1104)	(0.0545)	(0.1105)	(0.1105)	(0.1105)

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
Gypsy, Traveller/Irish Traveller	-0.0423	-0.1119	-0.1118	-0.0706	-0.0447	-0.1263	-0.1262	-0.0721
	(0.3446)	(0.5682)	(0.5682)	(0.5711)	(0.3449)	(0.5701)	(0.5700)	(0.5739)
Mixed / Multiple ethnic groups	-0.1766**	-0.1112	-0.1112	-0.1046	-0.1770**	-0.1138	-0.1138	-0.1081
	(0.0547)	(0.1100)	(0.1100)	(0.1100)	(0.0547)	(0.1102)	(0.1102)	(0.1102)
Indian	-0.0222	0.0837	0.0838	0.0799	-0.0220	0.0879	0.0879	0.0833
	(0.0503)	(0.1038)	(0.1038)	(0.1038)	(0.0503)	(0.1037)	(0.1037)	(0.1037)
Pakistani	-0.2434***	0.0393	0.0393	0.0382	-0.2433***	0.0395	0.0395	0.0376
	(0.0653)	(0.1261)	(0.1261)	(0.1261)	(0.0653)	(0.1261)	(0.1261)	(0.1261)
Bangladeshi	-0.3750***	-0.2064	-0.2063	-0.2200	-0.3755***	-0.2105	-0.2104	-0.2278
	(0.0934)	(0.1757)	(0.1757)	(0.1756)	(0.0934)	(0.1758)	(0.1758)	(0.1758)
Chinese	-0.1279*	-0.0060	-0.0060	-0.0020	-0.1276*	-0.0071	-0.0071	-0.0035
	(0.0568)	(0.1474)	(0.1475)	(0.1473)	(0.0568)	(0.1471)	(0.1471)	(0.1470)
Any other Asian background	0.0039	0.1401	0.1401	0.1384	0.0039	0.1405	0.1405	0.1368
	(0.0536)	(0.1080)	(0.1080)	(0.1080)	(0.0535)	(0.1080)	(0.1080)	(0.1080)
Black/ African/Caribbean/Black British	-0.4596***	-0.3772***	-0.3773***	-0.3731***	-0.4598***	-0.3787***	-0.3787***	-0.3723***
	(0.0364)	(0.0707)	(0.0707)	(0.0707)	(0.0364)	(0.0708)	(0.0708)	(0.0708)
Arab	-0.2086*	0.1068	0.1068	0.1099	-0.2095*	0.1051	0.1051	0.1103
	(0.1045)	(0.1975)	(0.1975)	(0.1975)	(0.1045)	(0.1974)	(0.1974)	(0.1974)
Other ethnic group	-0.1570***	-0.2822**	-0.2821**	-0.2880**	-0.1569***	-0.2814**	-0.2813**	-0.2880**
	(0.0474)	(0.1033)	(0.1033)	(0.1033)	(0.0474)	(0.1034)	(0.1034)	(0.1034)
Christian (all denominations)	0.1285***	0.1548***	0.1548***	0.1551***	0.1282***	0.1544***	0.1544***	0.1543***
	(0.0102)	(0.0202)	(0.0202)	(0.0202)	(0.0102)	(0.0202)	(0.0202)	(0.0202)
Buddhist	0.0207	-0.1397	-0.1397	-0.1446	0.0204	-0.1413	-0.1413	-0.1503
	(0.0640)	(0.1537)	(0.1537)	(0.1537)	(0.0640)	(0.1538)	(0.1538)	(0.1539)
Hindu	0.0044	0.0166	0.0166	0.0227	0.0041	0.0120	0.0120	0.0187
	(0.0590)	(0.1234)	(0.1234)	(0.1234)	(0.0590)	(0.1233)	(0.1233)	(0.1233)
Jewish	-0.0580	-0.2160+	-0.2160+	-0.2153+	-0.0566	-0.2167+	-0.2168+	-0.2179+
	(0.0712)	(0.1296)	(0.1296)	(0.1296)	(0.0712)	(0.1295)	(0.1295)	(0.1295)
Muslim	0.1993***	0.2923**	0.2924**	0.2960**	0.1993***	0.2923**	0.2924**	0.2954**
	(0.0471)	(0.0918)	(0.0918)	(0.0917)	(0.0471)	(0.0917)	(0.0918)	(0.0917)
Sikh	-0.0947	-0.2635	-0.2635	-0.2573	-0.0949	-0.2638	-0.2638	-0.2617
	(0.0856)	(0.1658)	(0.1658)	(0.1657)	(0.0856)	(0.1656)	(0.1656)	(0.1656)
Any other religion	-0.0488	-0.1387*	-0.1387*	-0.1368*	-0.0486	-0.1393*	-0.1393*	-0.1370*
	(0.0389)	(0.0683)	(0.0683)	(0.0683)	(0.0389)	(0.0682)	(0.0682)	(0.0683)
Employed	0.3728***	0.3688***	0.3688***	0.3692***	0.3730***	0.3689***	0.3688***	0.3676***
	(0.0159)	(0.0289)	(0.0289)	(0.0289)	(0.0160)	(0.0289)	(0.0289)	(0.0289)
Self-employed	0.3808***	0.3504***	0.3504***	0.3504***	0.3810***	0.3513***	0.3513***	0.3495***
	(0.0202)	(0.0370)	(0.0370)	(0.0370)	(0.0202)	(0.0370)	(0.0370)	(0.0370)
Gov. employed training	-0.2240+	-0.3061	-0.3061	-0.3307+	-0.2228+	-0.3004	-0.3004	-0.3176
	(0.1179)	(0.1965)	(0.1965)	(0.1967)	(0.1180)	(0.1971)	(0.1971)	(0.1972)
Student	0.4061***	0.3946***	0.3945***	0.3961***	0.4059***	0.3949***	0.3948***	0.3939***
	(0.0369)	(0.0925)	(0.0925)	(0.0924)	(0.0369)	(0.0924)	(0.0924)	(0.0924)

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
Retired	0.5820***	0.6300***	0.6300***	0.6313***	0.5824***	0.6300***	0.6300***	0.6295***
	(0.0210)	(0.0366)	(0.0366)	(0.0366)	(0.0210)	(0.0366)	(0.0366)	(0.0366)
Disabled, not working	-0.6816***	-0.5574***	-0.5573***	-0.5572***	-0.6818***	-0.5576***	-0.5575***	-0.5580***
	(0.0305)	(0.0383)	(0.0383)	(0.0383)	(0.0305)	(0.0383)	(0.0383)	(0.0383)
Length of time at address: 12 mths but less than 2 years	-0.0292	-0.0096	-0.0096	-0.0125	-0.0292	-0.0089	-0.0089	-0.0127
	(0.0206)	(0.0463)	(0.0463)	(0.0463)	(0.0206)	(0.0463)	(0.0463)	(0.0463)
2 years but less than 3 years	-0.0238	-0.0638	-0.0638	-0.0601	-0.0235	-0.0634	-0.0634	-0.0591
	(0.0221)	(0.0487)	(0.0487)	(0.0487)	(0.0221)	(0.0488)	(0.0488)	(0.0488)
3 years but less than 5 years	-0.0224	-0.0274	-0.0274	-0.0311	-0.0224	-0.0261	-0.0261	-0.0305
	(0.0202)	(0.0429)	(0.0429)	(0.0429)	(0.0202)	(0.0429)	(0.0429)	(0.0429)
5 years but less than 10 years	-0.0558**	-0.0570	-0.0570	-0.0563	-0.0552**	-0.0559	-0.0559	-0.0549
	(0.0187)	(0.0390)	(0.0390)	(0.0390)	(0.0187)	(0.0390)	(0.0390)	(0.0390)
10 years or longer	-0.0823***	-0.0872*	-0.0872*	-0.0877*	-0.0816***	-0.0856*	-0.0856*	-0.0858*
	(0.0185)	(0.0381)	(0.0381)	(0.0381)	(0.0185)	(0.0381)	(0.0381)	(0.0381)
Ex-smoker	0.2976***	0.3844***	0.3844***	0.3864***	0.2978***	0.3847***	0.3847***	0.3863***
	(0.0135)	(0.0246)	(0.0246)	(0.0246)	(0.0135)	(0.0247)	(0.0247)	(0.0247)
Never smoked	0.3599***	0.4515***	0.4515***	0.4544***	0.3601***	0.4516***	0.4516***	0.4546***
	(0.0132)	(0.0249)	(0.0249)	(0.0249)	(0.0132)	(0.0249)	(0.0249)	(0.0249)
Diff. reg wage	0.0112**	0.0136+	0.0136+	0.0126+				
	(0.0038)	(0.0072)	(0.0072)	(0.0072)				
Log regional unem	-0.0917	-0.4965+	-0.4965+	-0.4595+				
	(0.1379)	(0.2723)	(0.2723)	(0.2722)				
wage_st_dev					-0.0030	-0.0050	-0.0050	-0.0049
					(0.0022)	(0.0043)	(0.0043)	(0.0043)
unemp_st_dev					0.0321	0.0454	0.0454	0.0444
					(0.0287)	(0.0561)	(0.0561)	(0.0561)
Face-to-face interview	-0.1311***	-0.1595***	-0.1595***	-0.1595***	-0.1288***	-0.1553***	-0.1553***	-0.1559***
	(0.0100)	(0.0185)	(0.0185)	(0.0185)	(0.0099)	(0.0185)	(0.0185)	(0.0185)
North West	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Yorkshire and The Humber	-0.0347	-0.0611	-0.0611	-0.0570	-0.0288	-0.0090	-0.0090	-0.0086
	(0.0301)	(0.0576)	(0.0576)	(0.0576)	(0.0333)	(0.0648)	(0.0648)	(0.0648)
East Midlands	-0.0413	-0.1438	-0.1438	-0.1350	-0.0152	-0.0112	-0.0111	-0.0111
	(0.0468)	(0.0915)	(0.0915)	(0.0915)	(0.0496)	(0.0982)	(0.0982)	(0.0982)
West Midlands	-0.1037**	-0.1699**	-0.1699**	-0.1638*	-0.1029**	-0.1171	-0.1171	-0.1138
	(0.0326)	(0.0637)	(0.0637)	(0.0637)	(0.0369)	(0.0732)	(0.0732)	(0.0732)
East of England	-0.0816	-0.2528+	-0.2528+	-0.2309+	-0.0737+	-0.0854	-0.0854	-0.0786
	(0.0679)	(0.1338)	(0.1338)	(0.1337)	(0.0401)	(0.0792)	(0.0792)	(0.0791)
London	-0.0672*	-0.0747	-0.0747	-0.0688	0.0705	0.1880	0.1880	0.1879
	(0.0280)	(0.0539)	(0.0539)	(0.0539)	(0.1004)	(0.1977)	(0.1977)	(0.1977)
South East	-0.0593	-0.2652+	-0.2652+	-0.2430	-0.0051	0.0095	0.0095	0.0116

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
	(0.0769)	(0.1516)	(0.1516)	(0.1515)	(0.0258)	(0.0499)	(0.0499)	(0.0499)
South West	-0.0483	-0.2874+	-0.2874+	-0.2658+	-0.0385	-0.0885	-0.0885	-0.0827
	(0.0777)	(0.1539)	(0.1539)	(0.1538)	(0.0370)	(0.0725)	(0.0725)	(0.0725)
Wales	-0.0230	-0.0551	-0.0551	-0.0464	0.0257	0.0938	0.0938	0.0944
	(0.0386)	(0.0745)	(0.0745)	(0.0745)	(0.0456)	(0.0885)	(0.0885)	(0.0885)
Scotland	0.0783+	-0.0128	-0.0128	-0.0040	0.0652	0.0565	0.0565	0.0577
	(0.0465)	(0.0911)	(0.0911)	(0.0911)	(0.0616)	(0.1233)	(0.1233)	(0.1233)
Northern Ireland	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Spring	-0.0135	-0.0131	-0.0131	-0.0098	-0.0125	-0.0113	-0.0113	-0.0070
	(0.0137)	(0.0262)	(0.0262)	(0.0261)	(0.0137)	(0.0262)	(0.0262)	(0.0261)
Summer	0.0124	0.0269	0.0269	0.0285	0.0125	0.0271	0.0271	0.0304
	(0.0134)	(0.0255)	(0.0255)	(0.0255)	(0.0134)	(0.0255)	(0.0255)	(0.0255)
Autumn	-0.0009	0.0026	0.0026	0.0033	-0.0008	0.0026	0.0026	0.0046
	(0.0132)	(0.0255)	(0.0255)	(0.0255)	(0.0132)	(0.0255)	(0.0255)	(0.0255)
Constant	9.3164***	10.2023***	10.2025***	10.1264***	9.1633***	9.1400***	9.1402***	9.1549***
	(0.3334)	(0.6600)	(0.6600)	(0.6598)	(0.0946)	(0.1957)	(0.1957)	(0.1956)
Observations	214402	74206	74206	74206	214402	74206	74206	74206
R-squared	0.15	0.17	0.17	0.17	0.15	0.17	0.17	0.17
ll	-4.19e+05				-4.19e+05			
chi2		10336	10335	10327		10336	10335	10319

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.6.2 Happiness

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
Disabled	-0.5610***	-0.6600***	-0.6603***	-0.6570***	-0.5609***	-0.6606***	-0.6608***	-0.6587***
	(0.0155)	(0.0366)	(0.0366)	(0.0366)	(0.0156)	(0.0366)	(0.0366)	(0.0366)
PIP	0.1045***	0.0621*	0.0621*	0.0624*	0.1223***	0.0328	0.0328	0.0335
	(0.0154)	(0.0285)	(0.0285)	(0.0285)	(0.0217)	(0.0413)	(0.0413)	(0.0413)
Benefits	-0.0286*	-0.0454+	-0.0454+	-0.0449+	-0.0288*	-0.0453+	-0.0453+	-0.0448+
	(0.0131)	(0.0243)	(0.0243)	(0.0243)	(0.0131)	(0.0243)	(0.0243)	(0.0243)
First regions	-0.0069	-0.0613	-0.0613	-0.0634	0.0382	-0.0085	-0.0085	-0.0115
	(0.0501)	(0.0951)	(0.0951)	(0.0951)	(0.0447)	(0.0833)	(0.0833)	(0.0832)
Married	0.4397***	0.5210***	0.5210***	0.5206***	0.4398***	0.5211***	0.5211***	0.5209***
	(0.0127)	(0.0235)	(0.0235)	(0.0235)	(0.0127)	(0.0235)	(0.0235)	(0.0235)
Female	0.0888***	0.0603**	0.0603**	0.0579**	0.0888***	0.0602**	0.0602**	0.0582**
	(0.0121)	(0.0224)	(0.0224)	(0.0224)	(0.0121)	(0.0224)	(0.0224)	(0.0224)
Age	-0.0714***	-0.0809***	-0.0809***	-0.0812***	-0.0714***	-0.0808***	-0.0808***	-0.0811***
	(0.0032)	(0.0063)	(0.0063)	(0.0063)	(0.0032)	(0.0063)	(0.0063)	(0.0063)
Age squared	0.0008***	0.0010***	0.0010***	0.0010***	0.0008***	0.0010***	0.0010***	0.0010***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Higher educ	0.0351+	0.0814*	0.0815*	0.0801*	0.0352+	0.0814*	0.0814*	0.0800*
	(0.0187)	(0.0371)	(0.0371)	(0.0371)	(0.0187)	(0.0371)	(0.0371)	(0.0371)
GCE, A-level or equivalent	0.0089	0.0176	0.0176	0.0163	0.0089	0.0178	0.0178	0.0166
	(0.0159)	(0.0340)	(0.0340)	(0.0340)	(0.0159)	(0.0339)	(0.0339)	(0.0339)
GCSE grades A-C or equivalent*	0.0070	0.0152	0.0152	0.0166	0.0071	0.0155	0.0155	0.0171
	(0.0165)	(0.0344)	(0.0344)	(0.0344)	(0.0165)	(0.0344)	(0.0344)	(0.0344)
Other qualifications	0.0832***	0.0718	0.0718	0.0698	0.0834***	0.0720	0.0720	0.0710
	(0.0237)	(0.0441)	(0.0441)	(0.0441)	(0.0237)	(0.0441)	(0.0441)	(0.0441)
No qualification	.	0.0121	0.0121	0.0100	.	0.0120	0.0121	0.0107
	.	(0.0452)	(0.0452)	(0.0452)	.	(0.0452)	(0.0452)	(0.0452)
Educ_squared	-0.0013+	.	.	.	-0.0013+	.	.	.
	(0.0007)	.	.	.	(0.0007)	.	.	.
Age_left_FT_educ	-0.0075	0.0016	0.0016	0.0005	-0.0075	0.0016	0.0016	0.0007
	(0.0047)	(0.0100)	(0.0100)	(0.0100)	(0.0047)	(0.0100)	(0.0100)	(0.0100)
Age_left_educ_squared	0.0003*	0.0001	0.0001	0.0001	0.0003*	0.0001	0.0001	0.0001
	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.1056***	-0.1440***	-0.1440***	-0.1434***	-0.1055***	-0.1444***	-0.1444***	-0.1440***
	(0.0154)	(0.0273)	(0.0273)	(0.0272)	(0.0154)	(0.0272)	(0.0272)	(0.0272)
Terraced	-0.1660*	-0.2928+	-0.2928+	-0.2955+	-0.1654*	-0.2938+	-0.2938+	-0.2981*
	(0.0804)	(0.1517)	(0.1517)	(0.1517)	(0.0804)	(0.1517)	(0.1517)	(0.1517)
Flatmaisonette - purpose built	-0.2340***	-0.2763***	-0.2763***	-0.2759***	-0.2338***	-0.2769***	-0.2769***	-0.2765***
	(0.0187)	(0.0327)	(0.0327)	(0.0327)	(0.0187)	(0.0327)	(0.0327)	(0.0327)
Flatmaiste - part hseconverted hse	-0.0094	-0.1873	-0.1873	-0.1898	-0.0095	-0.1872	-0.1872	-0.1918
	(0.0626)	(0.1247)	(0.1247)	(0.1247)	(0.0626)	(0.1247)	(0.1247)	(0.1247)
Gypsy,	-0.5488	-0.3785	-0.3785	-0.3512	-0.5467	-0.3712	-0.3712	-0.3455

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
Traveller/Irish Traveller								
	(0.3529)	(0.5909)	(0.5909)	(0.5928)	(0.3527)	(0.5902)	(0.5902)	(0.5918)
Mixed / Multiple ethnic groups	-0.0169	0.0612	0.0612	0.0665	-0.0166	0.0607	0.0607	0.0669
	(0.0638)	(0.1193)	(0.1193)	(0.1192)	(0.0638)	(0.1192)	(0.1192)	(0.1192)
Indian	0.1142+	0.2579*	0.2579*	0.2543*	0.1141+	0.2580*	0.2580*	0.2555*
	(0.0608)	(0.1225)	(0.1225)	(0.1225)	(0.0608)	(0.1225)	(0.1225)	(0.1225)
Pakistani	0.0026	0.0551	0.0551	0.0444	0.0028	0.0547	0.0547	0.0458
	(0.0769)	(0.1469)	(0.1469)	(0.1469)	(0.0769)	(0.1469)	(0.1469)	(0.1469)
Bangladeshi	0.1121	0.1697	0.1697	0.2151	0.1139	0.1724	0.1724	0.2174
	(0.1036)	(0.2112)	(0.2112)	(0.2111)	(0.1036)	(0.2112)	(0.2112)	(0.2110)
Chinese	0.0517	0.3546+	0.3546+	0.3613*	0.0507	0.3559*	0.3559*	0.3621*
	(0.0744)	(0.1814)	(0.1814)	(0.1813)	(0.0744)	(0.1815)	(0.1815)	(0.1815)
Any other Asian background	0.0735	0.0849	0.0849	0.0778	0.0729	0.0850	0.0850	0.0846
	(0.0717)	(0.1641)	(0.1641)	(0.1640)	(0.0718)	(0.1644)	(0.1644)	(0.1644)
Black/ African/Caribbean/Black British	-0.1057*	0.0145	0.0145	0.0157	-0.1055*	0.0154	0.0154	0.0155
	(0.0420)	(0.0804)	(0.0804)	(0.0804)	(0.0420)	(0.0804)	(0.0804)	(0.0804)
Arab	-0.1051	0.0124	0.0124	0.0184	-0.1041	0.0116	0.0116	0.0154
	(0.1260)	(0.2536)	(0.2536)	(0.2536)	(0.1259)	(0.2536)	(0.2536)	(0.2536)
Other ethnic group	-0.0097	-0.2606*	-0.2606*	-0.2679*	-0.0093	-0.2603*	-0.2603*	-0.2661*
	(0.0577)	(0.1288)	(0.1288)	(0.1287)	(0.0577)	(0.1287)	(0.1287)	(0.1287)
Christian (all denominations)	0.1706***	0.2171***	0.2171***	0.2166***	0.1708***	0.2174***	0.2174***	0.2169***
	(0.0128)	(0.0244)	(0.0244)	(0.0244)	(0.0128)	(0.0244)	(0.0244)	(0.0244)
Buddhist	0.1836*	0.1384	0.1384	0.1374	0.1842*	0.1371	0.1371	0.1360
	(0.0810)	(0.1612)	(0.1612)	(0.1613)	(0.0811)	(0.1611)	(0.1611)	(0.1612)
Hindu	0.0874	0.0995	0.0995	0.1045	0.0873	0.0990	0.0990	0.1028
	(0.0724)	(0.1510)	(0.1510)	(0.1510)	(0.0724)	(0.1510)	(0.1510)	(0.1510)
Jewish	-0.0143	-0.2192	-0.2192	-0.2278	-0.0158	-0.2197	-0.2197	-0.2268
	(0.0872)	(0.1645)	(0.1645)	(0.1645)	(0.0872)	(0.1646)	(0.1646)	(0.1645)
Muslim	0.0676	0.1248	0.1248	0.1291	0.0674	0.1245	0.1245	0.1279
	(0.0588)	(0.1114)	(0.1114)	(0.1113)	(0.0588)	(0.1114)	(0.1114)	(0.1114)
Sikh	-0.1359	-0.2458	-0.2458	-0.2489	-0.1359	-0.2457	-0.2457	-0.2489
	(0.1022)	(0.1834)	(0.1834)	(0.1834)	(0.1022)	(0.1834)	(0.1834)	(0.1834)
Any other religion	0.1170*	0.1636*	0.1637*	0.1629*	0.1167*	0.1641*	0.1641*	0.1633*
	(0.0456)	(0.0722)	(0.0722)	(0.0722)	(0.0456)	(0.0722)	(0.0722)	(0.0722)
Employed	0.1162***	0.1352***	0.1352***	0.1370***	0.1161***	0.1355***	0.1355***	0.1369***
	(0.0187)	(0.0340)	(0.0340)	(0.0340)	(0.0187)	(0.0340)	(0.0340)	(0.0340)
Self-employed	0.1962***	0.1978***	0.1978***	0.1992***	0.1961***	0.1976***	0.1976***	0.1990***
	(0.0240)	(0.0432)	(0.0432)	(0.0432)	(0.0240)	(0.0432)	(0.0432)	(0.0432)
Gov. employed training	0.0820	0.1362	0.1362	0.1485	0.0825	0.1354	0.1354	0.1403
	(0.1367)	(0.2235)	(0.2235)	(0.2237)	(0.1367)	(0.2233)	(0.2233)	(0.2235)
Student	0.1906***	0.1415	0.1415	0.1400	0.1906***	0.1423	0.1423	0.1423
	(0.0493)	(0.1191)	(0.1191)	(0.1191)	(0.0493)	(0.1190)	(0.1190)	(0.1190)

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
Retired	0.4006***	0.4520***	0.4520***	0.4553***	0.4003***	0.4523***	0.4523***	0.4554***
	(0.0247)	(0.0431)	(0.0431)	(0.0431)	(0.0247)	(0.0431)	(0.0431)	(0.0431)
Disabled, not working	-0.7898***	-0.6488***	-0.6488***	-0.6471***	-0.7896***	-0.6485***	-0.6484***	-0.6468***
	(0.0345)	(0.0435)	(0.0435)	(0.0435)	(0.0346)	(0.0435)	(0.0435)	(0.0435)
Length of time at address: 12 mths but less than 2 years	-0.0523*	-0.0244	-0.0244	-0.0260	-0.0521*	-0.0247	-0.0247	-0.0263
	(0.0265)	(0.0564)	(0.0564)	(0.0564)	(0.0265)	(0.0564)	(0.0564)	(0.0564)
2 years but less than 3 years	0.0024	-0.0170	-0.0170	-0.0144	0.0025	-0.0170	-0.0170	-0.0139
	(0.0280)	(0.0597)	(0.0597)	(0.0597)	(0.0280)	(0.0597)	(0.0597)	(0.0597)
3 years but less than 5 years	-0.0266	-0.0594	-0.0594	-0.0597	-0.0264	-0.0599	-0.0599	-0.0594
	(0.0250)	(0.0514)	(0.0514)	(0.0514)	(0.0250)	(0.0514)	(0.0514)	(0.0514)
5 years but less than 10 years	-0.0479*	-0.0408	-0.0408	-0.0401	-0.0479*	-0.0415	-0.0414	-0.0405
	(0.0234)	(0.0471)	(0.0471)	(0.0471)	(0.0234)	(0.0471)	(0.0471)	(0.0471)
10 years or longer	-0.0699**	-0.0973*	-0.0973*	-0.0968*	-0.0699**	-0.0980*	-0.0980*	-0.0977*
	(0.0231)	(0.0459)	(0.0459)	(0.0459)	(0.0231)	(0.0459)	(0.0459)	(0.0458)
Ex-smoker	0.2653***	0.3436***	0.3436***	0.3450***	0.2651***	0.3432***	0.3432***	0.3452***
	(0.0168)	(0.0296)	(0.0296)	(0.0296)	(0.0168)	(0.0296)	(0.0296)	(0.0296)
Never smoked	0.3382***	0.4231***	0.4231***	0.4237***	0.3380***	0.4228***	0.4228***	0.4242***
	(0.0164)	(0.0299)	(0.0299)	(0.0299)	(0.0164)	(0.0299)	(0.0299)	(0.0299)
wage_st_dev	-0.0048+	0.0004	0.0004	0.0004				
	(0.0027)	(0.0051)	(0.0051)	(0.0051)				
unemp_st_dev	0.0312	-0.0428	-0.0428	-0.0456				
	(0.0357)	(0.0677)	(0.0677)	(0.0677)				
Diff. reg wage				0.0071	0.0131		0.0131	0.0120
					(0.0047)	(0.0087)	(0.0087)	(0.0087)
Log regional unem				0.1625	-0.1048		-0.1048	-0.1132
					(0.1719)	(0.3277)	(0.3277)	(0.3276)
Face-to-face interview	-0.1252***	-0.1151***	-0.1151***	-0.1145***	-0.1256***	-0.1170***	-0.1171***	-0.1161***
	(0.0124)	(0.0224)	(0.0224)	(0.0224)	(0.0124)	(0.0225)	(0.0225)	(0.0225)
North West	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Yorkshire and The Humber	0.0113	-0.0216	-0.0216	-0.0220	0.0487	0.0136	0.0137	0.0133
	(0.0414)	(0.0777)	(0.0777)	(0.0777)	(0.0373)	(0.0687)	(0.0687)	(0.0687)
East Midlands	0.0290	-0.0224	-0.0224	-0.0270	0.0942	0.0281	0.0281	0.0242
	(0.0619)	(0.1183)	(0.1183)	(0.1183)	(0.0583)	(0.1098)	(0.1098)	(0.1098)
West Midlands	-0.0324	-0.1030	-0.1030	-0.1036	0.0196	-0.0599	-0.0599	-0.0612
	(0.0461)	(0.0883)	(0.0883)	(0.0883)	(0.0405)	(0.0763)	(0.0763)	(0.0763)
East of England	-0.0065	0.0294	0.0294	0.0291	0.1278	0.0184	0.0184	0.0155
	(0.0507)	(0.0954)	(0.0954)	(0.0954)	(0.0841)	(0.1601)	(0.1601)	(0.1600)
London	0.2195+	-0.0321	-0.0321	-0.0323	0.0306	0.0219	0.0219	0.0208
	(0.1250)	(0.2353)	(0.2353)	(0.2353)	(0.0348)	(0.0649)	(0.0649)	(0.0649)
South East	0.0404	-0.0265	-0.0265	-0.0275	0.1151	-0.0495	-0.0495	-0.0542
	(0.0323)	(0.0597)	(0.0597)	(0.0597)	(0.0956)	(0.1824)	(0.1824)	(0.1823)

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
South West	-0.0320	0.0003	0.0003	-0.0001	0.1159	-0.0335	-0.0335	-0.0383
	(0.0467)	(0.0867)	(0.0867)	(0.0867)	(0.0963)	(0.1835)	(0.1835)	(0.1835)
Wales	0.0991+	0.0279	0.0279	0.0252	0.1083*	0.0775	0.0775	0.0757
	(0.0566)	(0.1064)	(0.1064)	(0.1064)	(0.0480)	(0.0894)	(0.0894)	(0.0894)
Scotland	0.0307	0.0159	0.0159	0.0110	0.1665**	0.0498	0.0498	0.0459
	(0.0772)	(0.1491)	(0.1491)	(0.1490)	(0.0578)	(0.1094)	(0.1094)	(0.1093)
Northern Ireland	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Spring	0.0630***	0.0763*	0.0763*	0.0778*	0.0627***	0.0757*	0.0757*	0.0772*
	(0.0169)	(0.0313)	(0.0313)	(0.0313)	(0.0169)	(0.0313)	(0.0313)	(0.0313)
Summer	0.0766***	0.1064***	0.1064***	0.1062***	0.0767***	0.1062***	0.1062***	0.1061***
	(0.0166)	(0.0304)	(0.0304)	(0.0304)	(0.0166)	(0.0304)	(0.0304)	(0.0304)
Autumn	-0.0181	0.0024	0.0024	0.0026	-0.0182	0.0023	0.0023	0.0026
	(0.0165)	(0.0306)	(0.0306)	(0.0306)	(0.0165)	(0.0306)	(0.0306)	(0.0306)
Constant	8.4975***	8.3414***	8.3415***	8.3612***	7.9890***	8.5140***	8.5141***	8.5461***
	(0.1179)	(0.2376)	(0.2376)	(0.2375)	(0.4150)	(0.7945)	(0.7945)	(0.7942)
Observations	214374	74185	74185	74185	214374	74185	74185	74185
R-squared	0.072	0.093	0.093	0.093	0.072	0.093	0.093	0.093
ll	-4.64e+05				-4.64e+05			
chi2		5486	5485	5482		5486	5486	5483

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.6.3 Anxiety

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
Disabled	0.7452***	0.7714***	0.7718***	0.7696***	0.7454***	0.7726***	0.7730***	0.7708***
	(0.0200)	(0.0465)	(0.0465)	(0.0465)	(0.0201)	(0.0465)	(0.0465)	(0.0465)
PIP	-0.1960***	-0.1415***	-0.1415***	-0.1427***	-0.1463***	-0.0750	-0.0750	-0.0744
	(0.0200)	(0.0364)	(0.0364)	(0.0363)	(0.0288)	(0.0523)	(0.0523)	(0.0522)
Benefits	0.0196	0.0862**	0.0862**	0.0886**	0.0201	0.0860**	0.0860**	0.0885**
	(0.0172)	(0.0313)	(0.0313)	(0.0313)	(0.0172)	(0.0313)	(0.0313)	(0.0313)
First regions	0.0977	0.1653	0.1653	0.1640	-0.0408	0.0436	0.0436	0.0481
	(0.0660)	(0.1191)	(0.1191)	(0.1191)	(0.0586)	(0.1042)	(0.1042)	(0.1042)
Married	-0.1834***	-0.1999***	-0.1999***	-0.2011***	-0.1834***	-0.2000***	-0.2000***	-0.2006***
	(0.0165)	(0.0293)	(0.0293)	(0.0293)	(0.0165)	(0.0293)	(0.0293)	(0.0293)
Female	0.2121***	0.2461***	0.2461***	0.2439***	0.2122***	0.2460***	0.2460***	0.2442***
	(0.0159)	(0.0284)	(0.0284)	(0.0284)	(0.0159)	(0.0284)	(0.0284)	(0.0284)
Age	0.0814***	0.0933***	0.0933***	0.0933***	0.0816***	0.0933***	0.0933***	0.0933***
	(0.0041)	(0.0080)	(0.0080)	(0.0080)	(0.0041)	(0.0080)	(0.0080)	(0.0080)
Age squared	-0.0009***	-0.0011***	-0.0011***	-0.0011***	-0.0009***	-0.0010***	-0.0010***	-0.0010***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.1234***	-0.1213*	-0.1213*	-0.1207*	-0.1236***	-0.1214*	-0.1214*	-0.1202*
	(0.0259)	(0.0487)	(0.0487)	(0.0487)	(0.0259)	(0.0487)	(0.0487)	(0.0487)
GCE, A-level or equivalent	-0.1346***	-0.1498***	-0.1498***	-0.1484***	-0.1345***	-0.1503***	-0.1503***	-0.1481***
	(0.0212)	(0.0442)	(0.0442)	(0.0442)	(0.0212)	(0.0442)	(0.0442)	(0.0442)
GCSE grades A-C or equivalent*	-0.1629***	-0.1802***	-0.1802***	-0.1803***	-0.1634***	-0.1808***	-0.1808***	-0.1810***
	(0.0213)	(0.0446)	(0.0446)	(0.0446)	(0.0213)	(0.0446)	(0.0446)	(0.0446)
Other qualifications	-0.1229***	-0.2267***	-0.2267***	-0.2197***	-0.1238***	-0.2270***	-0.2270***	-0.2225***
	(0.0297)	(0.0555)	(0.0555)	(0.0555)	(0.0297)	(0.0555)	(0.0555)	(0.0555)
No qualification	.	-0.1269*	-0.1269*	-0.1215*	.	-0.1267*	-0.1267*	-0.1230*
	.	(0.0569)	(0.0569)	(0.0569)	.	(0.0569)	(0.0569)	(0.0569)
Educ_squared	-0.0035***	.	.	.	-0.0035***	.	.	.
	(0.0009)	.	.	.	(0.0009)	.	.	.
Age_left_FT_educ	-0.0379***	-0.0264*	-0.0264*	-0.0256*	-0.0381***	-0.0263*	-0.0263*	-0.0259*
	(0.0064)	(0.0122)	(0.0122)	(0.0122)	(0.0064)	(0.0122)	(0.0122)	(0.0122)
Age_left_educ_squared	0.0012***	0.0009*	0.0009*	0.0009*	0.0012***	0.0009*	0.0009*	0.0009*
	(0.0002)	(0.0004)	(0.0004)	(0.0004)	(0.0002)	(0.0004)	(0.0004)	(0.0004)
House or bungalow - semi detached	0.1306***	0.1807***	0.1807***	0.1822***	0.1305***	0.1818***	0.1818***	0.1838***
	(0.0209)	(0.0356)	(0.0356)	(0.0356)	(0.0209)	(0.0356)	(0.0356)	(0.0356)
Terraced	0.2564*	0.4728*	0.4728*	0.4689*	0.2549*	0.4743*	0.4743*	0.4723*
	(0.1007)	(0.1878)	(0.1878)	(0.1878)	(0.1006)	(0.1878)	(0.1878)	(0.1877)
Flatmaisonette - purpose built	0.2402***	0.2913***	0.2913***	0.2904***	0.2404***	0.2928***	0.2928***	0.2921***
	(0.0248)	(0.0417)	(0.0417)	(0.0417)	(0.0248)	(0.0417)	(0.0417)	(0.0417)
Flatmaiste - part hseconverted hse	0.1182	0.0912	0.0912	0.0897	0.1162	0.0917	0.0917	0.0933
	(0.0817)	(0.1505)	(0.1505)	(0.1505)	(0.0817)	(0.1505)	(0.1505)	(0.1505)
Gypsy,	0.6680	0.8498	0.8497	0.8290	0.6607	0.8296	0.8296	0.8046

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
Traveller/Irish Traveller								
	(0.5056)	(0.6392)	(0.6392)	(0.6405)	(0.5045)	(0.6386)	(0.6386)	(0.6401)
Mixed / Multiple ethnic groups	0.1818*	0.0841	0.0841	0.0647	0.1810*	0.0846	0.0846	0.0704
	(0.0864)	(0.1708)	(0.1708)	(0.1708)	(0.0863)	(0.1705)	(0.1705)	(0.1705)
Indian	0.0834	0.0139	0.0139	0.0261	0.0837	0.0143	0.0143	0.0266
	(0.0844)	(0.1615)	(0.1615)	(0.1616)	(0.0844)	(0.1615)	(0.1615)	(0.1615)
Pakistani	0.1817+	0.0048	0.0048	0.0050	0.1823+	0.0059	0.0059	0.0069
	(0.0978)	(0.1774)	(0.1774)	(0.1774)	(0.0978)	(0.1775)	(0.1775)	(0.1775)
Bangladeshi	-0.1034	-0.1464	-0.1464	-0.1565	-0.1077	-0.1542	-0.1542	-0.1615
	(0.1301)	(0.2592)	(0.2592)	(0.2593)	(0.1303)	(0.2595)	(0.2595)	(0.2596)
Chinese	-0.0773	-0.1304	-0.1303	-0.1308	-0.0771	-0.1311	-0.1311	-0.1393
	(0.1092)	(0.2923)	(0.2924)	(0.2924)	(0.1094)	(0.2940)	(0.2940)	(0.2939)
Any other Asian background	-0.0165	-0.3635+	-0.3635+	-0.3464+	-0.0166	-0.3639+	-0.3640+	-0.3572+
	(0.0872)	(0.1876)	(0.1876)	(0.1873)	(0.0873)	(0.1880)	(0.1880)	(0.1879)
Black/ African/Caribbean/Black British	-0.0740	-0.3551***	-0.3551***	-0.3573***	-0.0751	-0.3571***	-0.3571***	-0.3572***
	(0.0515)	(0.0987)	(0.0987)	(0.0987)	(0.0515)	(0.0988)	(0.0988)	(0.0988)
Arab	0.1929	0.2233	0.2234	0.2308	0.1925	0.2237	0.2238	0.2360
	(0.1572)	(0.2982)	(0.2982)	(0.2982)	(0.1570)	(0.2977)	(0.2977)	(0.2977)
Other ethnic group	0.0884	-0.0780	-0.0780	-0.0728	0.0866	-0.0790	-0.0790	-0.0737
	(0.0774)	(0.1575)	(0.1575)	(0.1574)	(0.0774)	(0.1575)	(0.1575)	(0.1575)
Christian (all denominations)	0.0563***	0.0500	0.0500	0.0496	0.0557***	0.0495	0.0495	0.0488
	(0.0168)	(0.0308)	(0.0308)	(0.0308)	(0.0168)	(0.0309)	(0.0309)	(0.0308)
Buddhist	0.0944	0.7017***	0.7017***	0.7046***	0.0939	0.7041***	0.7041***	0.7085***
	(0.1054)	(0.1909)	(0.1909)	(0.1909)	(0.1055)	(0.1910)	(0.1910)	(0.1910)
Hindu	0.1958*	0.3627+	0.3627+	0.3480+	0.1950*	0.3638+	0.3638+	0.3504+
	(0.0966)	(0.1905)	(0.1905)	(0.1905)	(0.0966)	(0.1904)	(0.1904)	(0.1904)
Jewish	0.3663**	0.5568**	0.5568**	0.5685**	0.3705**	0.5573**	0.5573**	0.5645**
	(0.1193)	(0.2052)	(0.2052)	(0.2051)	(0.1191)	(0.2055)	(0.2055)	(0.2054)
Muslim	0.1226+	0.0518	0.0518	0.0556	0.1226+	0.0527	0.0527	0.0533
	(0.0730)	(0.1379)	(0.1379)	(0.1379)	(0.0730)	(0.1380)	(0.1380)	(0.1380)
Sikh	0.2646*	0.5014*	0.5014*	0.4950*	0.2645*	0.5016*	0.5016*	0.4954*
	(0.1279)	(0.2362)	(0.2362)	(0.2363)	(0.1278)	(0.2362)	(0.2362)	(0.2362)
Any other religion	0.2026***	0.3436***	0.3436***	0.3426***	0.2023***	0.3425***	0.3425***	0.3402***
	(0.0604)	(0.0952)	(0.0952)	(0.0952)	(0.0604)	(0.0952)	(0.0952)	(0.0952)
Employed	-0.1397***	-0.1767***	-0.1767***	-0.1739***	-0.1396***	-0.1772***	-0.1771***	-0.1757***
	(0.0241)	(0.0429)	(0.0429)	(0.0429)	(0.0241)	(0.0429)	(0.0429)	(0.0429)
Self-employed	-0.1417***	-0.1605**	-0.1605**	-0.1566**	-0.1418***	-0.1598**	-0.1598**	-0.1579**
	(0.0319)	(0.0560)	(0.0560)	(0.0559)	(0.0319)	(0.0560)	(0.0560)	(0.0560)
Gov. employed training	0.1368	0.1110	0.1110	0.1001	0.1379	0.1127	0.1127	0.1117
	(0.1709)	(0.2453)	(0.2454)	(0.2454)	(0.1711)	(0.2453)	(0.2453)	(0.2453)
Student	0.0072	0.1675	0.1675	0.1666	0.0060	0.1660	0.1660	0.1612
	(0.0667)	(0.1492)	(0.1492)	(0.1492)	(0.0667)	(0.1494)	(0.1494)	(0.1493)

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
Retired	-0.4979***	-0.5291***	-0.5291***	-0.5280***	-0.4973***	-0.5294***	-0.5294***	-0.5297***
	(0.0329)	(0.0568)	(0.0568)	(0.0567)	(0.0329)	(0.0568)	(0.0568)	(0.0568)
Disabled, not working	0.8560***	0.6866***	0.6865***	0.6872***	0.8555***	0.6859***	0.6858***	0.6850***
	(0.0416)	(0.0523)	(0.0523)	(0.0523)	(0.0416)	(0.0524)	(0.0524)	(0.0523)
Length of time at address: 12 mths but less than 2 years	-0.0528	-0.0892	-0.0892	-0.0837	-0.0526	-0.0885	-0.0885	-0.0856
	(0.0343)	(0.0714)	(0.0714)	(0.0713)	(0.0343)	(0.0714)	(0.0714)	(0.0714)
2 years but less than 3 years	-0.0984**	-0.1224+	-0.1224+	-0.1276+	-0.0982**	-0.1226+	-0.1226+	-0.1273+
	(0.0366)	(0.0742)	(0.0742)	(0.0742)	(0.0366)	(0.0742)	(0.0742)	(0.0742)
3 years but less than 5 years	-0.1150***	-0.1247+	-0.1247+	-0.1271*	-0.1152***	-0.1236+	-0.1236+	-0.1284*
	(0.0327)	(0.0644)	(0.0644)	(0.0644)	(0.0327)	(0.0644)	(0.0644)	(0.0644)
5 years but less than 10 years	-0.0529+	-0.0945	-0.0945	-0.0977+	-0.0518+	-0.0933	-0.0933	-0.0980+
	(0.0304)	(0.0591)	(0.0591)	(0.0591)	(0.0304)	(0.0591)	(0.0591)	(0.0591)
10 years or longer	-0.0817**	-0.0588	-0.0588	-0.0600	-0.0806**	-0.0574	-0.0574	-0.0605
	(0.0298)	(0.0569)	(0.0569)	(0.0569)	(0.0298)	(0.0569)	(0.0569)	(0.0569)
Ex-smoker	-0.1599***	-0.2903***	-0.2903***	-0.2927***	-0.1594***	-0.2894***	-0.2894***	-0.2917***
	(0.0215)	(0.0370)	(0.0370)	(0.0370)	(0.0215)	(0.0370)	(0.0370)	(0.0370)
Never smoked	-0.2305***	-0.3126***	-0.3126***	-0.3137***	-0.2302***	-0.3120***	-0.3120***	-0.3142***
	(0.0209)	(0.0368)	(0.0368)	(0.0368)	(0.0209)	(0.0368)	(0.0368)	(0.0368)
wage_st_dev	0.0025	0.0021	0.0021	0.0019				
	(0.0036)	(0.0065)	(0.0065)	(0.0065)				
unemp_st_dev	0.0759	0.1104	0.1104	0.1104				
	(0.0471)	(0.0851)	(0.0851)	(0.0851)				
Diff. reg wage					-0.0306***	-0.0238*	-0.0238*	-0.0230*
					(0.0062)	(0.0109)	(0.0109)	(0.0109)
Log regional unem				0.1672		0.4103	0.4103	0.4148
					(0.2268)	(0.4128)	(0.4128)	(0.4127)
Face-to-face interview	0.0161	0.0208	0.0208	0.0226	0.0197	0.0242	0.0242	0.0248
	(0.0164)	(0.0288)	(0.0288)	(0.0288)	(0.0164)	(0.0288)	(0.0288)	(0.0288)
North West	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Yorkshire and The Humber	0.0635	0.0690	0.0690	0.0731	-0.0344	-0.0187	-0.0187	-0.0118
	(0.0543)	(0.0980)	(0.0980)	(0.0980)	(0.0487)	(0.0864)	(0.0864)	(0.0864)
East Midlands	0.1771*	0.2056	0.2056	0.2043	0.0300	0.0836	0.0836	0.0875
	(0.0815)	(0.1492)	(0.1492)	(0.1492)	(0.0766)	(0.1378)	(0.1378)	(0.1377)
West Midlands	-0.1041+	-0.0295	-0.0295	-0.0275	-0.2273***	-0.1393	-0.1393	-0.1340
	(0.0610)	(0.1122)	(0.1122)	(0.1122)	(0.0534)	(0.0962)	(0.0962)	(0.0962)
East of England	0.1037	0.0763	0.0763	0.0702	0.0549	0.1237	0.1237	0.1243
	(0.0664)	(0.1223)	(0.1223)	(0.1222)	(0.1113)	(0.2011)	(0.2011)	(0.2010)
London	0.1213	0.2020	0.2020	0.2134	0.1458**	0.2201**	0.2201**	0.2240**
	(0.1647)	(0.2981)	(0.2981)	(0.2981)	(0.0454)	(0.0818)	(0.0818)	(0.0818)
South East	0.0171	0.0543	0.0543	0.0612	0.0430	0.2024	0.2024	0.2097

Variable	OLSO	TWOSLS	LIML	GMM	OLSo	TWOSLS	LIML	GMM
	(0.0422)	(0.0754)	(0.0754)	(0.0754)	(0.1261)	(0.2287)	(0.2287)	(0.2286)
South West	0.0447	0.0037	0.0037	0.0011	0.0389	0.1246	0.1246	0.1297
	(0.0608)	(0.1107)	(0.1107)	(0.1107)	(0.1266)	(0.2304)	(0.2304)	(0.2304)
Wales	0.0760	0.0975	0.0974	0.0985	-0.0310	0.0011	0.0011	0.0041
	(0.0742)	(0.1323)	(0.1323)	(0.1323)	(0.0628)	(0.1117)	(0.1117)	(0.1117)
Scotland	0.0827	0.0794	0.0794	0.0758	-0.0794	-0.0518	-0.0518	-0.0466
	(0.1021)	(0.1892)	(0.1892)	(0.1892)	(0.0760)	(0.1369)	(0.1369)	(0.1368)
Northern Ireland	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Spring	0.0533*	0.0673+	0.0673+	0.0647	0.0550*	0.0684+	0.0684+	0.0661+
	(0.0223)	(0.0396)	(0.0396)	(0.0396)	(0.0223)	(0.0397)	(0.0397)	(0.0396)
Summer	0.0215	0.0332	0.0332	0.0324	0.0219	0.0336	0.0336	0.0330
	(0.0217)	(0.0384)	(0.0384)	(0.0384)	(0.0217)	(0.0384)	(0.0384)	(0.0384)
Autumn	0.0873***	0.1265**	0.1265**	0.1252**	0.0876***	0.1264**	0.1264**	0.1256**
	(0.0216)	(0.0385)	(0.0385)	(0.0385)	(0.0216)	(0.0385)	(0.0385)	(0.0385)
Constant	1.4989***	1.3051***	1.3050***	1.3036***	1.3637*	0.6314	0.6312	0.6153
	(0.1558)	(0.3010)	(0.3010)	(0.3010)	(0.5477)	(0.9979)	(0.9979)	(0.9975)
Observations	214161	74110	74110	74110	214161	74110	74110	74110
R-squared	0.045	0.053	0.053	0.053	0.045	0.053	0.053	0.053
ll	-5.23e+05				-5.23e+05			
chi2		3208	3208	3209		3212	3212	3212

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.6.4 Worthwhile

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
Disabled	-0.3728***	-0.5133***	-0.5135***	-0.5117***	-0.3729***	-0.5136***	-0.5138***	-0.5137***
	(0.0124)	(0.0294)	(0.0294)	(0.0294)	(0.0124)	(0.0294)	(0.0294)	(0.0294)
PIP	0.0851***	0.0202	0.0202	0.0183	0.0737***	-0.0145	-0.0145	-0.0179
	(0.0121)	(0.0235)	(0.0235)	(0.0235)	(0.0173)	(0.0339)	(0.0339)	(0.0338)
Benefits	0.0621***	0.0411*	0.0411*	0.0419*	0.0620***	0.0414*	0.0414*	0.0427*
	(0.0104)	(0.0194)	(0.0194)	(0.0194)	(0.0104)	(0.0194)	(0.0194)	(0.0194)
First regions	-0.0318	0.0100	0.0100	0.0102	-0.0308	-0.0572	-0.0572	-0.0603
	(0.0398)	(0.0774)	(0.0774)	(0.0774)	(0.0355)	(0.0683)	(0.0683)	(0.0683)
Married	0.4150***	0.4879***	0.4879***	0.4856***	0.4150***	0.4878***	0.4878***	0.4859***
	(0.0102)	(0.0192)	(0.0192)	(0.0192)	(0.0102)	(0.0192)	(0.0192)	(0.0192)
Female	0.2908***	0.3227***	0.3227***	0.3222***	0.2907***	0.3225***	0.3225***	0.3220***
	(0.0098)	(0.0186)	(0.0186)	(0.0186)	(0.0098)	(0.0186)	(0.0186)	(0.0186)
Age	-0.0434***	-0.0513***	-0.0513***	-0.0518***	-0.0434***	-0.0513***	-0.0513***	-0.0515***
	(0.0026)	(0.0052)	(0.0052)	(0.0052)	(0.0026)	(0.0052)	(0.0052)	(0.0052)
Age squared	0.0005***	0.0006***	0.0006***	0.0006***	0.0005***	0.0006***	0.0006***	0.0006***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.0111	0.0070	0.0070	0.0059	-0.0111	0.0072	0.0072	0.0060
	(0.0147)	(0.0296)	(0.0296)	(0.0296)	(0.0147)	(0.0296)	(0.0296)	(0.0296)
GCE, A-level or equivalent	-0.0307*	-0.0901**	-0.0901**	-0.0932***	-0.0308*	-0.0898**	-0.0898**	-0.0917***
	(0.0125)	(0.0276)	(0.0276)	(0.0276)	(0.0125)	(0.0276)	(0.0276)	(0.0276)
GCSE grades A-C or equivalent*	-0.0262*	-0.1627***	-0.1627***	-0.1619***	-0.0260+	-0.1622***	-0.1622***	-0.1612***
	(0.0133)	(0.0284)	(0.0284)	(0.0284)	(0.0133)	(0.0284)	(0.0284)	(0.0284)
Other qualifications	0.0198	-0.1476***	-0.1476***	-0.1484***	0.0201	-0.1472***	-0.1472***	-0.1473***
	(0.0196)	(0.0364)	(0.0364)	(0.0364)	(0.0196)	(0.0365)	(0.0365)	(0.0364)
No qualification	.	-0.2366***	-0.2366***	-0.2382***	.	-0.2361***	-0.2361***	-0.2363***
	.	(0.0386)	(0.0386)	(0.0386)	.	(0.0386)	(0.0386)	(0.0386)
Educ_squared	-0.0074***	.	.	.	-0.0074***	.	.	.
	(0.0006)	.	.	.	(0.0006)	.	.	.
Age_left_FT_educ	-0.0162***	0.0029	0.0029	0.0028	-0.0162***	0.0029	0.0029	0.0029
	(0.0039)	(0.0086)	(0.0086)	(0.0086)	(0.0039)	(0.0086)	(0.0086)	(0.0086)
Age_left_educ_squared	0.0003*	-0.0002	-0.0002	-0.0002	0.0003*	-0.0002	-0.0002	-0.0002
	(0.0001)	(0.0003)	(0.0003)	(0.0003)	(0.0001)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.0739***	-0.1273***	-0.1273***	-0.1274***	-0.0739***	-0.1276***	-0.1276***	-0.1280***
	(0.0122)	(0.0216)	(0.0216)	(0.0216)	(0.0122)	(0.0216)	(0.0216)	(0.0216)
Terraced	-0.1721**	-0.2288*	-0.2288*	-0.2329*	-0.1719**	-0.2296*	-0.2296*	-0.2333*
	(0.0562)	(0.1106)	(0.1106)	(0.1106)	(0.0562)	(0.1106)	(0.1106)	(0.1105)
Flatmaisonette - purpose built	-0.1578***	-0.1519***	-0.1519***	-0.1522***	-0.1578***	-0.1525***	-0.1525***	-0.1523***
	(0.0152)	(0.0267)	(0.0267)	(0.0267)	(0.0152)	(0.0267)	(0.0267)	(0.0267)
Flatmaiste - part hseconverted hse	0.0846	-0.0049	-0.0049	0.0018	0.0852	-0.0047	-0.0047	-0.0034
	(0.0530)	(0.1110)	(0.1111)	(0.1110)	(0.0530)	(0.1110)	(0.1110)	(0.1110)
Gypsy,	-0.0496	-0.5415	-0.5415	-0.4753	-0.0470	-0.5320	-0.5320	-0.4864

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
Traveller/Irish Traveller								
	(0.4346)	(0.7203)	(0.7203)	(0.7227)	(0.4346)	(0.7202)	(0.7202)	(0.7216)
Mixed / Multiple ethnic groups	-0.0176	0.1078	0.1078	0.1124	-0.0172	0.1095	0.1095	0.1154
	(0.0566)	(0.1081)	(0.1081)	(0.1081)	(0.0566)	(0.1080)	(0.1080)	(0.1080)
Indian	-0.0356	-0.0391	-0.0391	-0.0396	-0.0358	-0.0420	-0.0420	-0.0418
	(0.0485)	(0.1006)	(0.1006)	(0.1006)	(0.0485)	(0.1006)	(0.1006)	(0.1006)
Pakistani	-0.2072***	0.0800	0.0800	0.0747	-0.2073***	0.0797	0.0797	0.0772
	(0.0611)	(0.1213)	(0.1213)	(0.1213)	(0.0611)	(0.1213)	(0.1213)	(0.1213)
Bangladeshi	-0.1877*	-0.1173	-0.1173	-0.1311	-0.1870*	-0.1149	-0.1149	-0.1252
	(0.0849)	(0.1579)	(0.1579)	(0.1578)	(0.0849)	(0.1578)	(0.1578)	(0.1577)
Chinese	-0.2542***	-0.3260+	-0.3260+	-0.3176+	-0.2546***	-0.3258+	-0.3258+	-0.3166+
	(0.0716)	(0.1778)	(0.1778)	(0.1778)	(0.0716)	(0.1778)	(0.1778)	(0.1778)
Any other Asian background	-0.0755	-0.0047	-0.0047	-0.0005	-0.0756	-0.0048	-0.0048	-0.0015
	(0.0512)	(0.1142)	(0.1142)	(0.1141)	(0.0512)	(0.1142)	(0.1142)	(0.1142)
Black/ African/Caribbean/Black British	-0.0924**	-0.0452	-0.0452	-0.0400	-0.0922**	-0.0443	-0.0443	-0.0413
	(0.0336)	(0.0673)	(0.0673)	(0.0673)	(0.0336)	(0.0672)	(0.0672)	(0.0672)
Arab	-0.1707	-0.0972	-0.0973	-0.0869	-0.1698	-0.0956	-0.0956	-0.0893
	(0.1079)	(0.2056)	(0.2056)	(0.2056)	(0.1079)	(0.2055)	(0.2055)	(0.2054)
Other ethnic group	-0.1628***	-0.2791*	-0.2791*	-0.2846**	-0.1627***	-0.2795*	-0.2795*	-0.2855**
	(0.0479)	(0.1093)	(0.1093)	(0.1093)	(0.0479)	(0.1093)	(0.1093)	(0.1093)
Christian (all denominations)	0.1928***	0.2161***	0.2161***	0.2156***	0.1931***	0.2163***	0.2163***	0.2162***
	(0.0102)	(0.0199)	(0.0199)	(0.0199)	(0.0102)	(0.0199)	(0.0199)	(0.0199)
Buddhist	0.1218+	0.0664	0.0664	0.0723	0.1222+	0.0678	0.0678	0.0733
	(0.0715)	(0.1621)	(0.1621)	(0.1622)	(0.0714)	(0.1622)	(0.1622)	(0.1622)
Hindu	0.1072+	0.2178+	0.2178+	0.2158+	0.1075+	0.2209+	0.2209+	0.2192+
	(0.0570)	(0.1164)	(0.1164)	(0.1164)	(0.0570)	(0.1164)	(0.1164)	(0.1164)
Jewish	0.1346+	-0.1123	-0.1123	-0.1106	0.1334+	-0.1115	-0.1115	-0.1074
	(0.0788)	(0.1249)	(0.1249)	(0.1250)	(0.0787)	(0.1251)	(0.1251)	(0.1252)
Muslim	0.2011***	0.1948*	0.1948*	0.1940*	0.2011***	0.1950*	0.1950*	0.1944*
	(0.0447)	(0.0914)	(0.0914)	(0.0914)	(0.0447)	(0.0914)	(0.0914)	(0.0914)
Sikh	0.0894	0.0342	0.0342	0.0336	0.0896	0.0341	0.0341	0.0339
	(0.0758)	(0.1544)	(0.1544)	(0.1544)	(0.0758)	(0.1544)	(0.1544)	(0.1544)
Any other religion	0.1149**	0.1347*	0.1347*	0.1386*	0.1148**	0.1350*	0.1350*	0.1398*
	(0.0405)	(0.0671)	(0.0671)	(0.0672)	(0.0405)	(0.0672)	(0.0672)	(0.0672)
Employed	0.2465***	0.2314***	0.2314***	0.2310***	0.2464***	0.2314***	0.2313***	0.2314***
	(0.0155)	(0.0280)	(0.0280)	(0.0280)	(0.0155)	(0.0280)	(0.0280)	(0.0280)
Self-employed	0.3726***	0.3698***	0.3698***	0.3695***	0.3725***	0.3692***	0.3692***	0.3702***
	(0.0195)	(0.0352)	(0.0352)	(0.0352)	(0.0195)	(0.0352)	(0.0352)	(0.0352)
Gov. employed training	-0.3021**	-0.3911*	-0.3911*	-0.4066*	-0.3026**	-0.3951*	-0.3951*	-0.4215*
	(0.1117)	(0.1947)	(0.1947)	(0.1946)	(0.1118)	(0.1947)	(0.1947)	(0.1944)
Student	0.3172***	0.2924**	0.2924**	0.2871**	0.3173***	0.2921**	0.2921**	0.2931**
	(0.0395)	(0.0992)	(0.0992)	(0.0991)	(0.0395)	(0.0991)	(0.0991)	(0.0991)

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
Retired	0.2071***	0.1966***	0.1966***	0.1974***	0.2068***	0.1966***	0.1966***	0.1979***
	(0.0203)	(0.0354)	(0.0354)	(0.0354)	(0.0203)	(0.0354)	(0.0354)	(0.0354)
Disabled, not working	-0.9367***	-0.8530***	-0.8530***	-0.8515***	-0.9366***	-0.8530***	-0.8529***	-0.8519***
	(0.0308)	(0.0385)	(0.0385)	(0.0385)	(0.0308)	(0.0385)	(0.0385)	(0.0385)
Length of time at address: 12 mths but less than 2 years	-0.0022	0.0001	0.0001	0.0009	-0.0022	-0.0003	-0.0003	0.0014
	(0.0210)	(0.0463)	(0.0463)	(0.0463)	(0.0210)	(0.0463)	(0.0463)	(0.0463)
2 years but less than 3 years	0.0198	-0.0283	-0.0283	-0.0205	0.0196	-0.0286	-0.0286	-0.0208
	(0.0224)	(0.0491)	(0.0491)	(0.0490)	(0.0224)	(0.0490)	(0.0490)	(0.0490)
3 years but less than 5 years	0.0329	0.0042	0.0042	0.0059	0.0329	0.0034	0.0034	0.0049
	(0.0203)	(0.0433)	(0.0433)	(0.0433)	(0.0203)	(0.0432)	(0.0432)	(0.0432)
5 years but less than 10 years	0.0041	-0.0079	-0.0079	-0.0046	0.0036	-0.0086	-0.0086	-0.0054
	(0.0188)	(0.0394)	(0.0394)	(0.0394)	(0.0188)	(0.0394)	(0.0394)	(0.0394)
10 years or longer	-0.0227	-0.0242	-0.0242	-0.0213	-0.0231	-0.0252	-0.0252	-0.0231
	(0.0187)	(0.0383)	(0.0383)	(0.0383)	(0.0187)	(0.0383)	(0.0383)	(0.0383)
Ex-smoker	0.2030***	0.2894***	0.2894***	0.2897***	0.2029***	0.2893***	0.2893***	0.2904***
	(0.0134)	(0.0246)	(0.0246)	(0.0246)	(0.0134)	(0.0246)	(0.0246)	(0.0246)
Never smoked	0.2583***	0.3460***	0.3460***	0.3466***	0.2582***	0.3460***	0.3460***	0.3475***
	(0.0131)	(0.0248)	(0.0248)	(0.0248)	(0.0131)	(0.0248)	(0.0248)	(0.0247)
wage_st_dev	-0.0033	-0.0038	-0.0038	-0.0041				
	(0.0022)	(0.0043)	(0.0043)	(0.0043)				
unemp_st_dev	0.0191	0.0360	0.0360	0.0380				
	(0.0284)	(0.0555)	(0.0555)	(0.0555)				
Diff. reg wage					0.0084*	0.0076	0.0076	0.0073
					(0.0038)	(0.0071)	(0.0071)	(0.0071)
Log regional unem				-0.0847	-0.3432	-0.3432	-0.3553	
					(0.1363)	(0.2657)	(0.2657)	(0.2657)
Face-to-face interview	-0.0971***	-0.1455***	-0.1455***	-0.1479***	-0.0986***	-0.1482***	-0.1482***	-0.1497***
	(0.0097)	(0.0179)	(0.0179)	(0.0178)	(0.0097)	(0.0178)	(0.0178)	(0.0178)
North West	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Yorkshire and The Humber	-0.0067	0.0384	0.0384	0.0380	-0.0011	-0.0007	-0.0007	-0.0031
	(0.0327)	(0.0633)	(0.0633)	(0.0634)	(0.0295)	(0.0562)	(0.0562)	(0.0562)
East Midlands	-0.0305	0.0392	0.0392	0.0386	-0.0335	-0.0573	-0.0573	-0.0627
	(0.0490)	(0.0960)	(0.0960)	(0.0960)	(0.0462)	(0.0891)	(0.0891)	(0.0891)
West Midlands	-0.1361***	-0.1281+	-0.1281+	-0.1248+	-0.1236***	-0.1681**	-0.1681**	-0.1684**
	(0.0363)	(0.0714)	(0.0714)	(0.0714)	(0.0320)	(0.0619)	(0.0619)	(0.0619)
East of England	-0.0687+	-0.0372	-0.0372	-0.0350	-0.0620	-0.1519	-0.1519	-0.1546
	(0.0398)	(0.0781)	(0.0781)	(0.0781)	(0.0672)	(0.1308)	(0.1308)	(0.1308)
London	0.0395	0.1331	0.1331	0.1453	-0.1017***	-0.0693	-0.0693	-0.0693
	(0.1001)	(0.1976)	(0.1976)	(0.1974)	(0.0274)	(0.0532)	(0.0532)	(0.0532)
South East	-0.0069	0.0252	0.0252	0.0275	-0.0550	-0.1691	-0.1691	-0.1744

Variable	OLSO	TWOSLS	LIML	GMM	OLSO	TWOSLS	LIML	GMM
	(0.0255)	(0.0494)	(0.0494)	(0.0494)	(0.0761)	(0.1481)	(0.1481)	(0.1481)
South West	-0.0549	-0.0357	-0.0357	-0.0391	-0.0540	-0.1710	-0.1710	-0.1798
	(0.0368)	(0.0722)	(0.0722)	(0.0722)	(0.0762)	(0.1493)	(0.1493)	(0.1493)
Wales	0.0546	0.1353	0.1353	0.1382	0.0242	0.0250	0.0250	0.0222
	(0.0451)	(0.0872)	(0.0872)	(0.0872)	(0.0381)	(0.0729)	(0.0729)	(0.0729)
Scotland	-0.0253	-0.0107	-0.0107	-0.0145	0.0153	-0.0565	-0.0565	-0.0621
	(0.0610)	(0.1216)	(0.1216)	(0.1216)	(0.0460)	(0.0892)	(0.0892)	(0.0892)
Northern Ireland	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.
Spring	-0.0028	0.0248	0.0248	0.0262	-0.0035	0.0236	0.0236	0.0245
	(0.0135)	(0.0256)	(0.0256)	(0.0256)	(0.0135)	(0.0256)	(0.0256)	(0.0256)
Summer	0.0281*	0.0498*	0.0498*	0.0507*	0.0281*	0.0498*	0.0498*	0.0494*
	(0.0132)	(0.0252)	(0.0252)	(0.0251)	(0.0132)	(0.0252)	(0.0252)	(0.0251)
Autumn	0.0180	0.0576*	0.0576*	0.0566*	0.0179	0.0576*	0.0576*	0.0556*
	(0.0131)	(0.0251)	(0.0251)	(0.0251)	(0.0131)	(0.0251)	(0.0251)	(0.0251)
Constant	8.2555***	8.1940***	8.1941***	8.2156***	8.3643***	8.9253***	8.9253***	8.9631***
	(0.0958)	(0.2004)	(0.2004)	(0.2004)	(0.3302)	(0.6484)	(0.6484)	(0.6482)
Observations	213857	73981	73981	73981	213857	73981	73981	73981
R-squared	0.10	0.14	0.14	0.14	0.10	0.14	0.14	0.14
ll	-4.11e+05				-4.11e+05			
chi2		6731	6731	6717		6733	6733	6723

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.7 Control function

3.11.7.1 Life satisfaction, happiness, worthiness, and anxiety – all sample (CF - OLS) (complete results)

Variable	ls_cf1	ls_cf2	ls_cf3	happy_cf1	happy_cf2	happy_cf3	anxious_cf1	anxious_cf2	anxious_cf3	worth_cf1	worth_cf2	worth_cf3
PIP	0.0755+	0.1310***	0.0755+	0.1348**	0.1639***	0.1340**	-0.2484***	-0.3134***	-0.2480***	0.0614	0.0962**	0.0617
	(0.0396)	(0.0311)	(0.0396)	(0.0500)	(0.0408)	(0.0500)	(0.0647)	(0.0536)	(0.0647)	(0.0388)	(0.0306)	(0.0388)
Disabled	-0.7404***	-0.7400***	-0.7431***	-0.6307***	-0.6304***	-0.6007***	0.7217***	0.7213***	0.7052***	-0.4913***	-0.4911***	-0.5039***
	(0.0315)	(0.0315)	(0.0366)	(0.0382)	(0.0382)	(0.0442)	(0.0486)	(0.0486)	(0.0569)	(0.0308)	(0.0308)	(0.0362)
*PIP*Disabled*	-0.1558***	-0.1547***	-0.1559***	-0.1541**	-0.1525**	-0.1535**	0.2615***	0.2577***	0.2612***	-0.1147**	-0.1140**	-0.1149**
	(0.0399)	(0.0399)	(0.0399)	(0.0504)	(0.0504)	(0.0504)	(0.0652)	(0.0652)	(0.0652)	(0.0396)	(0.0396)	(0.0396)
Benefits	-0.1344***	-0.1348***	-0.1342***	-0.0453+	-0.0455+	-0.0476+	0.0860**	0.0862**	0.0872**	0.0413*	0.0411*	0.0423*
	(0.0200)	(0.0200)	(0.0200)	(0.0242)	(0.0243)	(0.0243)	(0.0313)	(0.0313)	(0.0313)	(0.0194)	(0.0194)	(0.0194)
First regions	-0.1213+	-0.0298	-0.1212+	-0.0078	-0.0581	-0.0088	0.0416	0.1599	0.0421	-0.0567	.	-0.0563
	(0.0691)	(0.0784)	(0.0691)	(0.0831)	(0.0949)	(0.0831)	(0.1041)	(0.1190)	(0.1041)	(0.0681)	.	(0.0681)
Married	0.7204***	0.7205***	0.7204***	0.5208***	0.5207***	0.5211***	-0.1996***	-0.1995***	-0.1998***	0.4878***	0.4879***	0.4877***
	(0.0198)	(0.0198)	(0.0198)	(0.0235)	(0.0235)	(0.0235)	(0.0293)	(0.0293)	(0.0293)	(0.0191)	(0.0191)	(0.0191)
Female	0.1581***	0.1584***	0.1547***	0.0601**	0.0602**	0.0992**	0.2462***	0.2462***	0.2247***	0.3223***	0.3225***	0.3060***
	(0.0188)	(0.0189)	(0.0264)	(0.0223)	(0.0223)	(0.0334)	(0.0283)	(0.0283)	(0.0441)	(0.0186)	(0.0186)	(0.0260)
*Female*Disabled*			0.0052			-0.0589			0.0324			0.0247
			(0.0338)			(0.0417)			(0.0539)			(0.0332)
Age	-0.0985***	-0.0985***	-0.0985***	-0.0812***	-0.0812***	-0.0812***	0.0938***	0.0939***	0.0938***	-0.0516***	-0.0516***	-0.0516***
	(0.0053)	(0.0053)	(0.0053)	(0.0063)	(0.0063)	(0.0063)	(0.0080)	(0.0080)	(0.0080)	(0.0052)	(0.0052)	(0.0052)
Age squared	0.0011***	0.0011***	0.0011***	0.0010***	0.0010***	0.0010***	-0.0011***	-0.0011***	-0.0011***	0.0006***	0.0006***	0.0006***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	0.0160	0.0158	0.0160	0.0798*	0.0799*	0.0799*	-0.1096*	-0.1095*	-0.1096*	0.0271	0.0270	0.0271
	(0.0292)	(0.0292)	(0.0292)	(0.0357)	(0.0357)	(0.0357)	(0.0469)	(0.0469)	(0.0469)	(0.0284)	(0.0284)	(0.0284)
GCE, A-level or equivalent	-0.0327	-0.0330	-0.0327	0.0147	0.0145	0.0145	-0.1207**	-0.1202**	-0.1206**	-0.0360	-0.0362	-0.0360
	(0.0242)	(0.0242)	(0.0242)	(0.0298)	(0.0298)	(0.0298)	(0.0386)	(0.0386)	(0.0386)	(0.0242)	(0.0242)	(0.0242)
GCSE grades A-C or equivalent*	-0.0838***	-0.0842***	-0.0838***	0.0095	0.0091	0.0094	-0.1252***	-0.1245***	-0.1252***	-0.0615*	-0.0618*	-0.0615*
	(0.0247)	(0.0247)	(0.0247)	(0.0291)	(0.0291)	(0.0291)	(0.0370)	(0.0369)	(0.0370)	(0.0242)	(0.0242)	(0.0242)
Other qualifications	0.0024	0.0023	0.0024	0.0635	0.0633	0.0632	-0.1399**	-0.1394**	-0.1397**	0.0147	0.0146	0.0148

Variable	ls_cf1	ls_cf2	ls_cf3	happy_cf1	happy_cf2	happy_cf3	anxious_cf1	anxious_cf2	anxious_cf3	worth_cf1	worth_cf2	worth_cf3
	(0.0339)	(0.0339)	(0.0339)	(0.0393)	(0.0393)	(0.0393)	(0.0484)	(0.0484)	(0.0484)	(0.0330)	(0.0330)	(0.0330)
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Educ_squared	0.0015	0.0015	0.0015	0.0003	0.0003	0.0004	-0.0036*	-0.0036*	-0.0036*	-0.0067***	-0.0068***	-0.0067***
	(0.0011)	(0.0011)	(0.0011)	(0.0013)	(0.0013)	(0.0013)	(0.0016)	(0.0016)	(0.0016)	(0.0011)	(0.0011)	(0.0011)
Age_left_FT_educ	-0.0073	-0.0073	-0.0073	0.0017	0.0017	0.0016	-0.0265*	-0.0266*	-0.0265*	0.0029	0.0029	0.0030
	(0.0081)	(0.0081)	(0.0081)	(0.0100)	(0.0100)	(0.0100)	(0.0123)	(0.0123)	(0.0123)	(0.0085)	(0.0085)	(0.0085)
Age_left_educ_squared	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0009*	0.0009*	0.0009*	-0.0002	-0.0002	-0.0002
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.2425***	-0.2421***	-0.2426***	-0.1444***	-0.1441***	-0.1436***	0.1819***	0.1808***	0.1814***	-0.1276***	-0.1274***	-0.1279***
	(0.0224)	(0.0224)	(0.0224)	(0.0272)	(0.0272)	(0.0272)	(0.0355)	(0.0355)	(0.0355)	(0.0215)	(0.0215)	(0.0215)
Terraced	-0.3853**	-0.3839**	-0.3854**	-0.2888+	-0.2878+	-0.2877+	0.4657*	0.4643*	0.4651*	-0.2259*	-0.2251*	-0.2264*
	(0.1201)	(0.1201)	(0.1201)	(0.1525)	(0.1525)	(0.1523)	(0.1888)	(0.1888)	(0.1889)	(0.1105)	(0.1105)	(0.1105)
Flatmaisonette - purpose built	-0.3323***	-0.3314***	-0.3324***	-0.2767***	-0.2761***	-0.2757***	0.2922***	0.2908***	0.2917***	-0.1523***	-0.1518***	-0.1527***
	(0.0273)	(0.0273)	(0.0273)	(0.0327)	(0.0327)	(0.0327)	(0.0417)	(0.0416)	(0.0416)	(0.0267)	(0.0266)	(0.0267)
Flatmaiste - part hseconverted hse	-0.1026	-0.1030	-0.1027	-0.1883	-0.1885	-0.1871	0.0935	0.0931	0.0928	-0.0057	-0.0059	-0.0062
	(0.1111)	(0.1112)	(0.1111)	(0.1247)	(0.1247)	(0.1247)	(0.1506)	(0.1505)	(0.1506)	(0.1118)	(0.1118)	(0.1118)
Gypsy, Traveller/Irish Traveller	-0.1093	-0.1237	-0.1095	-0.3698	-0.3769	-0.3675	0.8257	0.8456	0.8244	-0.5318	-0.5413	-0.5323
	(0.5701)	(0.5720)	(0.5701)	(0.5920)	(0.5927)	(0.5911)	(0.6456)	(0.6463)	(0.6456)	(0.7113)	(0.7115)	(0.7114)
Mixed / Multiple ethnic groups	-0.1148	-0.1173	-0.1149	0.0571	0.0575	0.0581	0.0904	0.0899	0.0899	0.1069	0.1051	0.1065
	(0.1094)	(0.1095)	(0.1094)	(0.1191)	(0.1191)	(0.1192)	(0.1707)	(0.1710)	(0.1708)	(0.1077)	(0.1078)	(0.1077)
Indian	0.0825	0.0867	0.0823	0.2567*	0.2566*	0.2587*	0.0166	0.0162	0.0156	-0.0426	-0.0397	-0.0435
	(0.1025)	(0.1024)	(0.1025)	(0.1219)	(0.1219)	(0.1219)	(0.1615)	(0.1615)	(0.1615)	(0.0998)	(0.0998)	(0.0998)
Pakistani	0.0381	0.0383	0.0382	0.0525	0.0529	0.0520	0.0085	0.0073	0.0087	0.0789	0.0793	0.0791
	(0.1247)	(0.1247)	(0.1247)	(0.1468)	(0.1468)	(0.1468)	(0.1776)	(0.1775)	(0.1776)	(0.1206)	(0.1207)	(0.1206)
Bangladeshi	-0.1995	-0.2035	-0.1995	0.1769	0.1742	0.1770	-0.1612	-0.1535	-0.1613	-0.1086	-0.1110	-0.1087
	(0.1750)	(0.1752)	(0.1750)	(0.2118)	(0.2118)	(0.2119)	(0.2583)	(0.2580)	(0.2582)	(0.1580)	(0.1581)	(0.1580)

Variable	ls_cf1	ls_cf2	ls_cf3	happy_cf1	happy_cf2	happy_cf3	anxious_cf1	anxious_cf2	anxious_cf3	worth_cf1	worth_cf2	worth_cf3
Chinese	-0.0017	-0.0031	-0.0021	0.3596*	0.3581*	0.3636*	-0.1369	-0.1358	-0.1391	-0.3218+	-0.3222+	-0.3235+
	(0.1446)	(0.1441)	(0.1446)	(0.1816)	(0.1814)	(0.1813)	(0.2903)	(0.2886)	(0.2906)	(0.1782)	(0.1781)	(0.1784)
Any other Asian background	0.1399	0.1403	0.1400	0.0844	0.0843	0.0833	-0.3641+	-0.3636+	-0.3635+	-0.0056	-0.0055	-0.0051
	(0.1075)	(0.1075)	(0.1075)	(0.1633)	(0.1630)	(0.1633)	(0.1868)	(0.1864)	(0.1868)	(0.1140)	(0.1139)	(0.1140)
Black/ African/Caribbean/Black British	-0.3789***	-0.3803***	-0.3789***	0.0141	0.0131	0.0145	-0.3554***	-0.3534***	-0.3556***	-0.0450	-0.0458	-0.0452
	(0.0699)	(0.0700)	(0.0699)	(0.0802)	(0.0802)	(0.0802)	(0.0988)	(0.0987)	(0.0988)	(0.0667)	(0.0668)	(0.0667)
Arab	0.1090	0.1074	0.1092	0.0113	0.0122	0.0091	0.2232	0.2227	0.2244	-0.0944	-0.0959	-0.0936
	(0.1978)	(0.1978)	(0.1979)	(0.2530)	(0.2530)	(0.2527)	(0.2973)	(0.2977)	(0.2973)	(0.2059)	(0.2060)	(0.2059)
Other ethnic group	-0.2794**	-0.2786**	-0.2793**	-0.2580*	-0.2583*	-0.2593*	-0.0823	-0.0813	-0.0816	-0.2769*	-0.2764*	-0.2763*
	(0.1028)	(0.1028)	(0.1028)	(0.1284)	(0.1285)	(0.1285)	(0.1574)	(0.1574)	(0.1574)	(0.1094)	(0.1094)	(0.1094)
Christian (all denominations)	0.1548***	0.1544***	0.1548***	0.2173***	0.2171***	0.2175***	0.0496	0.0501	0.0496	0.2164***	0.2161***	0.2163***
	(0.0201)	(0.0201)	(0.0201)	(0.0243)	(0.0243)	(0.0243)	(0.0308)	(0.0308)	(0.0308)	(0.0199)	(0.0199)	(0.0199)
Buddhist	-0.1371	-0.1387	-0.1371	0.1398	0.1411	0.1403	0.6996***	0.6973***	0.6994***	0.0703	0.0688	0.0700
	(0.1537)	(0.1539)	(0.1537)	(0.1615)	(0.1617)	(0.1615)	(0.1926)	(0.1924)	(0.1926)	(0.1614)	(0.1614)	(0.1615)
Hindu	0.0140	0.0093	0.0140	0.0979	0.0983	0.0979	0.3661+	0.3651+	0.3662+	0.2194+	0.2163+	0.2194+
	(0.1230)	(0.1229)	(0.1230)	(0.1505)	(0.1505)	(0.1506)	(0.1904)	(0.1905)	(0.1904)	(0.1163)	(0.1163)	(0.1163)
Jewish	-0.2180+	-0.2187+	-0.2181+	-0.2215	-0.2209	-0.2207	0.5593**	0.5587**	0.5588**	-0.1124	-0.1131	-0.1128
	(0.1287)	(0.1287)	(0.1287)	(0.1633)	(0.1633)	(0.1633)	(0.2036)	(0.2034)	(0.2036)	(0.1249)	(0.1247)	(0.1249)
Muslim	0.2914**	0.2914**	0.2914**	0.1248	0.1251	0.1252	0.0530	0.0521	0.0528	0.1936*	0.1934*	0.1935*
	(0.0911)	(0.0910)	(0.0911)	(0.1113)	(0.1112)	(0.1113)	(0.1381)	(0.1380)	(0.1380)	(0.0913)	(0.0913)	(0.0913)
Sikh	-0.2653	-0.2656	-0.2652	-0.2463	-0.2465	-0.2470	0.5032*	0.5031*	0.5036*	0.0330	0.0330	0.0332
	(0.1647)	(0.1645)	(0.1647)	(0.1833)	(0.1833)	(0.1834)	(0.2362)	(0.2362)	(0.2362)	(0.1535)	(0.1535)	(0.1535)
Any other religion	-0.1392*	-0.1398*	-0.1393*	0.1637*	0.1633*	0.1647*	0.3436***	0.3447***	0.3431***	0.1347*	0.1343*	0.1342*
	(0.0677)	(0.0676)	(0.0677)	(0.0721)	(0.0721)	(0.0721)	(0.0954)	(0.0954)	(0.0954)	(0.0669)	(0.0669)	(0.0669)
Employed	0.3687***	0.3688***	0.3688***	0.1354***	0.1351***	0.1350***	-0.1771***	-0.1766***	-0.1769***	0.2313***	0.2314***	0.2315***
	(0.0288)	(0.0288)	(0.0288)	(0.0340)	(0.0340)	(0.0340)	(0.0428)	(0.0429)	(0.0429)	(0.0280)	(0.0280)	(0.0280)
Self-employed	0.3504***	0.3514***	0.3504***	0.1978***	0.1981***	0.1978***	-0.1604**	-0.1611**	-0.1604**	0.3693***	0.3699***	0.3693***

Variable	ls_cf1	ls_cf2	ls_cf3	happy_cf1	happy_cf2	happy_cf3	anxious_cf1	anxious_cf2	anxious_cf3	worth_cf1	worth_cf2	worth_cf3
	(0.0368)	(0.0368)	(0.0368)	(0.0431)	(0.0431)	(0.0431)	(0.0559)	(0.0559)	(0.0559)	(0.0351)	(0.0351)	(0.0351)
Gov. employed training	-0.3049	-0.2991	-0.3049	0.1363	0.1372	0.1361	0.1107	0.1089	0.1108	-0.3946*	-0.3906*	-0.3945*
	(0.1938)	(0.1943)	(0.1938)	(0.2238)	(0.2239)	(0.2237)	(0.2460)	(0.2459)	(0.2460)	(0.1944)	(0.1943)	(0.1945)
Student	0.3934***	0.3937***	0.3935***	0.1410	0.1401	0.1399	0.1685	0.1700	0.1691	0.2912**	0.2915**	0.2917**
	(0.0925)	(0.0924)	(0.0925)	(0.1191)	(0.1191)	(0.1191)	(0.1500)	(0.1499)	(0.1500)	(0.0987)	(0.0987)	(0.0987)
Retired	0.6290***	0.6289***	0.6289***	0.4515***	0.4512***	0.4519***	-0.5281***	-0.5277***	-0.5283***	0.1960***	0.1960***	0.1958***
	(0.0364)	(0.0364)	(0.0364)	(0.0430)	(0.0430)	(0.0430)	(0.0567)	(0.0567)	(0.0567)	(0.0354)	(0.0354)	(0.0354)
Disabled, not working	-0.5572***	-0.5574***	-0.5571***	-0.6482***	-0.6486***	-0.6489***	0.6854***	0.6861***	0.6858***	-0.8527***	-0.8528***	-0.8524***
	(0.0383)	(0.0383)	(0.0383)	(0.0435)	(0.0435)	(0.0435)	(0.0524)	(0.0524)	(0.0524)	(0.0385)	(0.0385)	(0.0385)
Length of time at address: 12 mths but less than 2 years	-0.0091	-0.0084	-0.0091	-0.0242	-0.0240	-0.0244	-0.0890	-0.0897	-0.0889	-0.0001	0.0003	-0.0000
	(0.0462)	(0.0462)	(0.0462)	(0.0564)	(0.0564)	(0.0564)	(0.0713)	(0.0713)	(0.0713)	(0.0463)	(0.0463)	(0.0463)
2 years but less than 3 years	-0.0643	-0.0638	-0.0643	-0.0175	-0.0175	-0.0177	-0.1216	-0.1214	-0.1215	-0.0288	-0.0285	-0.0287
	(0.0485)	(0.0485)	(0.0485)	(0.0595)	(0.0595)	(0.0595)	(0.0741)	(0.0741)	(0.0741)	(0.0489)	(0.0489)	(0.0489)
3 years but less than 5 years	-0.0282	-0.0269	-0.0282	-0.0604	-0.0599	-0.0604	-0.1226+	-0.1237+	-0.1226+	0.0029	0.0038	0.0028
	(0.0427)	(0.0428)	(0.0427)	(0.0513)	(0.0513)	(0.0513)	(0.0645)	(0.0644)	(0.0645)	(0.0432)	(0.0432)	(0.0432)
5 years but less than 10 years	-0.0568	-0.0556	-0.0568	-0.0412	-0.0405	-0.0412	-0.0934	-0.0946	-0.0934	-0.0084	-0.0077	-0.0084
	(0.0388)	(0.0388)	(0.0388)	(0.0470)	(0.0470)	(0.0470)	(0.0590)	(0.0590)	(0.0590)	(0.0393)	(0.0393)	(0.0393)
10 years or longer	-0.0871*	-0.0856*	-0.0871*	-0.0978*	-0.0971*	-0.0978*	-0.0576	-0.0591	-0.0577	-0.0252	-0.0241	-0.0252
	(0.0380)	(0.0380)	(0.0380)	(0.0458)	(0.0458)	(0.0458)	(0.0568)	(0.0568)	(0.0568)	(0.0382)	(0.0382)	(0.0382)
Ex-smoker	0.3849***	0.3852***	0.3848***	0.3436***	0.3440***	0.3440***	-0.2900***	-0.2908***	-0.2902***	0.2895***	0.2897***	0.2893***
	(0.0246)	(0.0246)	(0.0246)	(0.0296)	(0.0296)	(0.0296)	(0.0370)	(0.0370)	(0.0370)	(0.0246)	(0.0246)	(0.0246)
Never smoked	0.4518***	0.4519***	0.4518***	0.4231***	0.4235***	0.4234***	-0.3125***	-0.3130***	-0.3126***	0.3461***	0.3461***	0.3460***
	(0.0249)	(0.0249)	(0.0249)	(0.0298)	(0.0298)	(0.0298)	(0.0368)	(0.0368)	(0.0368)	(0.0247)	(0.0248)	(0.0247)
Diff. reg wage	0.0140+		0.0140*	0.0135		0.0135	-0.0245*		-0.0245*	0.0078		0.0079
	(0.0071)		(0.0071)	(0.0087)		(0.0087)	(0.0109)		(0.0109)	(0.0071)		(0.0071)
Log regional unem	-0.4962+		-0.4958+	-0.1038		-0.1085	0.4037		0.4063	-0.3417		-0.3397
	(0.2706)		(0.2705)	(0.3269)		(0.3269)	(0.4124)		(0.4124)	(0.2652)		(0.2651)

Variable	ls_cf1	ls_cf2	ls_cf3	happy_cf1	happy_cf2	happy_cf3	anxious_cf1	anxious_cf2	anxious_cf3	worth_cf1	worth_cf2	worth_cf3
Face-to-face interview	-0.1581***	-0.1537***	-0.1581***	-0.1157***	-0.1137***	-0.1160***	0.0219	0.0184	0.0220	-0.1470***	-0.1442***	-0.1468***
	(0.0184)	(0.0184)	(0.0184)	(0.0224)	(0.0224)	(0.0224)	(0.0288)	(0.0288)	(0.0288)	(0.0178)	(0.0178)	(0.0178)
North West	.	.	.	.	.	.	.	.	.	.	0.0124	.
	.	.	.	.	.	.	.	.	.	.	(0.0773)	.
Yorkshire and The Humber	-0.0609	-0.0067	-0.0608	0.0139	-0.0194	0.0129	-0.0195	0.0652	-0.0190	-0.0006	0.0400	-0.0003
	(0.0573)	(0.0644)	(0.0573)	(0.0686)	(0.0775)	(0.0686)	(0.0863)	(0.0979)	(0.0863)	(0.0561)	(0.0632)	(0.0561)
East Midlands	-0.1431	-0.0066	-0.1429	0.0292	-0.0177	0.0276	0.0808	0.1977	0.0816	-0.0564	0.0429	-0.0558
	(0.0910)	(0.0976)	(0.0910)	(0.1096)	(0.1181)	(0.1095)	(0.1376)	(0.1491)	(0.1376)	(0.0889)	(0.0958)	(0.0889)
West Midlands	-0.1690**	-0.1136	-0.1690**	-0.0588	-0.0994	-0.0595	-0.1420	-0.0358	-0.1416	-0.1673**	-0.1254+	-0.1670**
	(0.0634)	(0.0729)	(0.0634)	(0.0762)	(0.0882)	(0.0762)	(0.0961)	(0.1121)	(0.0961)	(0.0618)	(0.0713)	(0.0618)
East of England	-0.2527+	-0.0816	-0.2525+	0.0190	0.0330	0.0167	0.1203	0.0698	0.1216	-0.1513	-0.0347	-0.1503
	(0.1331)	(0.0788)	(0.1330)	(0.1596)	(0.0954)	(0.1596)	(0.2008)	(0.1222)	(0.2009)	(0.1305)	(0.0781)	(0.1305)
London	-0.0746	0.1801	-0.0746	0.0224	-0.0379	0.0216	0.2191**	0.2130	0.2195**	-0.0688	0.1292	-0.0685
	(0.0537)	(0.1968)	(0.0537)	(0.0648)	(0.2350)	(0.0648)	(0.0817)	(0.2981)	(0.0817)	(0.0531)	(0.1973)	(0.0531)
South East	-0.2654+	0.0090	-0.2651+	-0.0491	-0.0265	-0.0516	0.1990	0.0544	0.2004	-0.1684	0.0251	-0.1675
	(0.1506)	(0.0497)	(0.1506)	(0.1819)	(0.0596)	(0.1819)	(0.2284)	(0.0754)	(0.2284)	(0.1477)	(0.0493)	(0.1477)
South West	-0.2870+	-0.0851	-0.2867+	-0.0329	0.0032	-0.0355	0.1211	-0.0012	0.1226	-0.1701	-0.0336	-0.1691
	(0.1530)	(0.0722)	(0.1529)	(0.1831)	(0.0866)	(0.1831)	(0.2302)	(0.1106)	(0.2302)	(0.1489)	(0.0721)	(0.1489)
Wales	-0.0551	0.0954	-0.0551	0.0778	0.0299	0.0769	-0.0004	0.0939	0.0000	0.0252	0.1370	0.0255
	(0.0741)	(0.0879)	(0.0741)	(0.0892)	(0.1061)	(0.0892)	(0.1116)	(0.1321)	(0.1116)	(0.0727)	(0.0870)	(0.0727)
Scotland	-0.0143	0.0620	-0.0142	0.0487	0.0211	0.0475	-0.0512	0.0702	-0.0505	-0.0574	-0.0068	-0.0569
	(0.0906)	(0.1226)	(0.0906)	(0.1091)	(0.1489)	(0.1091)	(0.1367)	(0.1891)	(0.1367)	(0.0890)	(0.1214)	(0.0890)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Spring	-0.0132	-0.0114	-0.0132	0.0755*	0.0762*	0.0755*	0.0687+	0.0675+	0.0687+	0.0236	0.0248	0.0236
	(0.0260)	(0.0260)	(0.0260)	(0.0313)	(0.0313)	(0.0313)	(0.0396)	(0.0396)	(0.0396)	(0.0256)	(0.0256)	(0.0256)
Summer	0.0269	0.0271	0.0269	0.1063***	0.1065***	0.1064***	0.0335	0.0331	0.0334	0.0499*	0.0500*	0.0499*
	(0.0254)	(0.0254)	(0.0254)	(0.0304)	(0.0304)	(0.0304)	(0.0384)	(0.0384)	(0.0384)	(0.0251)	(0.0251)	(0.0251)
Autumn	0.0031	0.0031	0.0031	0.0029	0.0029	0.0028	0.1256**	0.1257**	0.1256**	0.0581*	0.0581*	0.0581*
	(0.0254)	(0.0254)	(0.0254)	(0.0306)	(0.0306)	(0.0306)	(0.0385)	(0.0385)	(0.0385)	(0.0251)	(0.0251)	(0.0250)

Variable	ls_cf1	ls_cf2	ls_cf3	happy_cf1	happy_cf2	happy_cf3	anxious_cf1	anxious_cf2	anxious_cf3	worth_cf1	worth_cf2	worth_cf3
Residuals	0.5850***	0.5845***	0.5849***	0.4557***	0.4551***	0.4563***	-0.4694***	-0.4682***	-0.4697***	0.4072***	0.4070***	0.4070***
	(0.0379)	(0.0379)	(0.0379)	(0.0469)	(0.0469)	(0.0469)	(0.0602)	(0.0602)	(0.0602)	(0.0369)	(0.0369)	(0.0369)
wage_st_dev		-0.0048			0.0006			0.0018			-0.0037	
		(0.0043)			(0.0051)			(0.0065)			(0.0043)	
unemp_st_dev		0.0464			-0.0415			0.1081			0.0372	
		(0.0558)			(0.0676)			(0.0850)			(0.0554)	
Constant	10.1860***	9.1159***	10.1867***	8.4970***	8.3189***	8.4895***	0.6751	1.3468***	0.6793	8.9171***	8.1836***	8.9204***
	(0.6559)	(0.1951)	(0.6560)	(0.7928)	(0.2376)	(0.7928)	(0.9967)	(0.3014)	(0.9968)	(0.6473)	(0.2007)	(0.6474)
Observations	74206	74206	74206	74185	74185	74185	74110	74110	74110	73981	73981	73981
R-squared	0.18	0.18	0.18	0.097	0.097	0.097	0.056	0.056	0.056	0.14	0.14	0.14
ll	-1.54e+05	-1.54e+05	-1.54e+05	-1.68e+05	-1.68e+05	-1.68e+05	-1.86e+05	-1.86e+05	-1.86e+05	-1.52e+05	-1.52e+05	-1.52e+05

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.7.2 Self-assessed health – all sample (CF - PPO) (complete results)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
PIP	0.2655	0.2150	0.3707	0.3541+	0.3034	0.3571+	0.2274***	0.1769***	0.2253***	0.1326*	0.0821+	0.1309*
	(0.6899)	(0.6895)	(0.7290)	(0.2134)	(0.2118)	(0.2149)	(0.0542)	(0.0485)	(0.0542)	(0.0529)	(0.0467)	(0.0530)
Disabled	-4.0372***	-4.0358***	-4.1401***	-3.5249***	-3.5249***	-3.3913***	-2.1240***	-2.1243***	-2.0374***	-1.6442***	-1.6443***	-1.5654***
	(0.3659)	(0.3658)	(0.5663)	(0.1091)	(0.1091)	(0.1510)	(0.0365)	(0.0365)	(0.0442)	(0.0595)	(0.0595)	(0.0685)
*PIP*Disabled*	-0.3129	-0.3139	-0.4186	-0.4347*	-0.4354*	-0.4380*	-0.2512***	-0.2516***	-0.2494***	-0.1625*	-0.1628*	-0.1596*
	(0.6917)	(0.6917)	(0.7308)	(0.2142)	(0.2142)	(0.2156)	(0.0565)	(0.0565)	(0.0565)	(0.0724)	(0.0724)	(0.0724)
Benefits	-0.4058***	-0.4058***	-0.4079***	-0.3442***	-0.3440***	-0.3492***	-0.1223***	-0.1222***	-0.1267***	0.0308	0.0308	0.0281
	(0.0923)	(0.0923)	(0.0924)	(0.0390)	(0.0390)	(0.0391)	(0.0240)	(0.0240)	(0.0241)	(0.0325)	(0.0325)	(0.0325)
First regions	0.3176**		0.3157**	0.1190		0.1175	0.2455***		0.2441***	0.1761+		0.1734+
	(0.1133)		(0.1133)	(0.0812)		(0.0812)	(0.0726)		(0.0726)	(0.0900)		(0.0900)
Married	0.0166	0.0166	0.0172	0.0166	0.0166	0.0172	0.0166	0.0166	0.0172	0.0166	0.0166	0.0172
	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)	(0.0189)
Female	0.1172*	0.1169*	-0.1120	0.1176***	0.1173***	0.3662*	0.0447*	0.0446*	0.1625***	-0.0315	-0.0312	0.0414
	(0.0492)	(0.0492)	(0.6694)	(0.0295)	(0.0295)	(0.1788)	(0.0227)	(0.0227)	(0.0391)	(0.0317)	(0.0317)	(0.0398)
*Female*Disabled*			0.2193			-0.2718			-0.1724***			-0.1615**
			(0.6710)			(0.1806)			(0.0456)			(0.0585)
Age	-0.0491**	-0.0490**	-0.0490**	-0.0672***	-0.0671***	-0.0671***	-0.0604***	-0.0603***	-0.0604***	-0.0468***	-0.0467***	-0.0467***
	(0.0188)	(0.0188)	(0.0188)	(0.0096)	(0.0096)	(0.0096)	(0.0063)	(0.0063)	(0.0063)	(0.0076)	(0.0076)	(0.0076)
Age squared	0.0005*	0.0005*	0.0005*	0.0007***	0.0007***	0.0007***	0.0005***	0.0005***	0.0005***	0.0004***	0.0004***	0.0004***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.1976+	-0.1972+	-0.1985*	-0.1269*	-0.1269*	-0.1270*	-0.0082	-0.0083	-0.0080	-0.0576	-0.0577	-0.0572
	(0.1008)	(0.1008)	(0.1008)	(0.0573)	(0.0573)	(0.0573)	(0.0369)	(0.0369)	(0.0369)	(0.0470)	(0.0470)	(0.0470)
GCE, A-level or equivalent	-0.2686***	-0.2681***	-0.2679***	-0.1942***	-0.1939***	-0.1949***	-0.0762*	-0.0760*	-0.0763*	-0.1905***	-0.1902***	-0.1903***
	(0.0727)	(0.0727)	(0.0729)	(0.0432)	(0.0432)	(0.0432)	(0.0305)	(0.0305)	(0.0305)	(0.0405)	(0.0405)	(0.0404)
GCSE grades A-C or equivalent*	-0.1421*	-0.1424*	-0.1416*	-0.0426	-0.0427	-0.0428	-0.0451	-0.0449	-0.0454	-0.1505***	-0.1501***	-0.1505***
	(0.0666)	(0.0666)	(0.0666)	(0.0394)	(0.0394)	(0.0394)	(0.0290)	(0.0290)	(0.0290)	(0.0405)	(0.0405)	(0.0405)
Other qualifications	0.0123	0.0123	0.0123	0.0649	0.0653	0.0647	0.0292	0.0298	0.0282	-0.0828	-0.0822	-0.0831
	(0.0753)	(0.0753)	(0.0753)	(0.0453)	(0.0453)	(0.0453)	(0.0371)	(0.0371)	(0.0371)	(0.0580)	(0.0580)	(0.0580)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3
Educ_squared	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***	-0.0100***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Age_left_FT_educ	0.0049	0.0050	0.0047	0.0079	0.0080	0.0078	0.0184*	0.0185*	0.0183*	0.0028	0.0029	0.0027
	(0.0107)	(0.0107)	(0.0107)	(0.0089)	(0.0089)	(0.0089)	(0.0082)	(0.0082)	(0.0082)	(0.0087)	(0.0087)	(0.0087)
Age_left_educ_squared	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.1341***	-0.1343***	-0.1322***	-0.1341***	-0.1343***	-0.1322***	-0.1341***	-0.1343***	-0.1322***	-0.1341***	-0.1343***	-0.1322***
	(0.0237)	(0.0237)	(0.0236)	(0.0237)	(0.0237)	(0.0236)	(0.0237)	(0.0237)	(0.0236)	(0.0237)	(0.0237)	(0.0236)
Terraced	-0.3235*	-0.3232*	-0.3209*	-0.3235*	-0.3232*	-0.3209*	-0.3235*	-0.3232*	-0.3209*	-0.3235*	-0.3232*	-0.3209*
	(0.1367)	(0.1368)	(0.1370)	(0.1367)	(0.1368)	(0.1370)	(0.1367)	(0.1368)	(0.1370)	(0.1367)	(0.1368)	(0.1370)
Flatmaisonette - purpose built	-0.3050***	-0.3055***	-0.3027***	-0.3050***	-0.3055***	-0.3027***	-0.3050***	-0.3055***	-0.3027***	-0.3050***	-0.3055***	-0.3027***
	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)	(0.0271)
Flatmaiste - part hseconverted hse	-0.5468***	-0.5463***	-0.5429***	-0.5468***	-0.5463***	-0.5429***	-0.5468***	-0.5463***	-0.5429***	-0.5468***	-0.5463***	-0.5429***
	(0.1030)	(0.1030)	(0.1028)	(0.1030)	(0.1030)	(0.1028)	(0.1030)	(0.1030)	(0.1028)	(0.1030)	(0.1030)	(0.1028)
Gypsy, Traveller/Irish Traveller	0.2899	0.2920	0.2940	0.2899	0.2920	0.2940	0.2899	0.2920	0.2940	0.2899	0.2920	0.2940
	(0.3700)	(0.3686)	(0.3683)	(0.3700)	(0.3686)	(0.3683)	(0.3700)	(0.3686)	(0.3683)	(0.3700)	(0.3686)	(0.3683)
Mixed / Multiple ethnic groups	0.0204	0.0215	0.0213	0.0204	0.0215	0.0213	0.0204	0.0215	0.0213	0.0204	0.0215	0.0213
	(0.0952)	(0.0952)	(0.0951)	(0.0952)	(0.0952)	(0.0951)	(0.0952)	(0.0952)	(0.0951)	(0.0952)	(0.0952)	(0.0951)
Indian	-0.2286*	-0.2294*	-0.2227*	-0.2286*	-0.2294*	-0.2227*	-0.2286*	-0.2294*	-0.2227*	-0.2286*	-0.2294*	-0.2227*
	(0.1038)	(0.1039)	(0.1036)	(0.1038)	(0.1039)	(0.1036)	(0.1038)	(0.1039)	(0.1036)	(0.1038)	(0.1039)	(0.1036)
Pakistani	-0.2873**	-0.2874**	-0.2873**	-0.2873**	-0.2874**	-0.2873**	-0.2873**	-0.2874**	-0.2873**	-0.2873**	-0.2874**	-0.2873**
	(0.1088)	(0.1088)	(0.1086)	(0.1088)	(0.1088)	(0.1086)	(0.1088)	(0.1088)	(0.1086)	(0.1088)	(0.1088)	(0.1086)
Bangladeshi	-0.1757	-0.1752	-0.1746	-0.1757	-0.1752	-0.1746	-0.1757	-0.1752	-0.1746	-0.1757	-0.1752	-0.1746
	(0.1585)	(0.1585)	(0.1580)	(0.1585)	(0.1585)	(0.1580)	(0.1585)	(0.1585)	(0.1580)	(0.1585)	(0.1585)	(0.1580)
Chinese	-0.3093+	-0.3069+	-0.2989+	-0.3093+	-0.3069+	-0.2989+	-0.3093+	-0.3069+	-0.2989+	-0.3093+	-0.3069+	-0.2989+
	(0.1709)	(0.1705)	(0.1705)	(0.1709)	(0.1705)	(0.1705)	(0.1709)	(0.1705)	(0.1705)	(0.1709)	(0.1705)	(0.1705)
Any other Asian background	-0.3573**	-0.3569**	-0.3585**	-0.3573**	-0.3569**	-0.3585**	-0.3573**	-0.3569**	-0.3585**	-0.3573**	-0.3569**	-0.3585**
	(0.1173)	(0.1173)	(0.1172)	(0.1173)	(0.1173)	(0.1172)	(0.1173)	(0.1173)	(0.1172)	(0.1173)	(0.1173)	(0.1172)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3
Black/ African/Caribbean/Black British	-0.2054***	-0.2040***	-0.2049***	-0.2054***	-0.2040***	-0.2049***	-0.2054***	-0.2040***	-0.2049***	-0.2054***	-0.2040***	-0.2049***
	(0.0604)	(0.0604)	(0.0605)	(0.0604)	(0.0604)	(0.0605)	(0.0604)	(0.0604)	(0.0605)	(0.0604)	(0.0604)	(0.0605)
Arab	-0.0528	-0.0532	-0.0555	-0.0528	-0.0532	-0.0555	-0.0528	-0.0532	-0.0555	-0.0528	-0.0532	-0.0555
	(0.1765)	(0.1766)	(0.1762)	(0.1765)	(0.1766)	(0.1762)	(0.1765)	(0.1766)	(0.1762)	(0.1765)	(0.1766)	(0.1762)
Other ethnic group	-0.0751	-0.0752	-0.0769	-0.0751	-0.0752	-0.0769	-0.0751	-0.0752	-0.0769	-0.0751	-0.0752	-0.0769
	(0.0915)	(0.0916)	(0.0914)	(0.0915)	(0.0916)	(0.0914)	(0.0915)	(0.0916)	(0.0914)	(0.0915)	(0.0916)	(0.0914)
Christian (all denominations)	0.0095	0.0097	0.0096	0.0095	0.0097	0.0096	0.0095	0.0097	0.0096	0.0095	0.0097	0.0096
	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)	(0.0203)
Buddhist	0.0798	0.0797	0.0811	0.0798	0.0797	0.0811	0.0798	0.0797	0.0811	0.0798	0.0797	0.0811
	(0.1695)	(0.1694)	(0.1694)	(0.1695)	(0.1694)	(0.1694)	(0.1695)	(0.1694)	(0.1694)	(0.1695)	(0.1694)	(0.1694)
Hindu	-0.1208	-0.1191	-0.1220	-0.1208	-0.1191	-0.1220	-0.1208	-0.1191	-0.1220	-0.1208	-0.1191	-0.1220
	(0.1235)	(0.1235)	(0.1234)	(0.1235)	(0.1235)	(0.1234)	(0.1235)	(0.1235)	(0.1234)	(0.1235)	(0.1235)	(0.1234)
Jewish	-0.4627***	-0.4619***	-0.4614***	-0.4627***	-0.4619***	-0.4614***	-0.4627***	-0.4619***	-0.4614***	-0.4627***	-0.4619***	-0.4614***
	(0.1267)	(0.1267)	(0.1264)	(0.1267)	(0.1267)	(0.1264)	(0.1267)	(0.1267)	(0.1264)	(0.1267)	(0.1267)	(0.1264)
Muslim	-0.2460**	-0.2461**	-0.2460**	-0.2460**	-0.2461**	-0.2460**	-0.2460**	-0.2461**	-0.2460**	-0.2460**	-0.2461**	-0.2460**
	(0.0811)	(0.0811)	(0.0809)	(0.0811)	(0.0811)	(0.0809)	(0.0811)	(0.0811)	(0.0809)	(0.0811)	(0.0811)	(0.0809)
Sikh	-0.1874	-0.1860	-0.1913	-0.1874	-0.1860	-0.1913	-0.1874	-0.1860	-0.1913	-0.1874	-0.1860	-0.1913
	(0.1525)	(0.1525)	(0.1523)	(0.1525)	(0.1525)	(0.1523)	(0.1525)	(0.1525)	(0.1523)	(0.1525)	(0.1525)	(0.1523)
Any other religion	-0.2800***	-0.2787***	-0.2777***	-0.2800***	-0.2787***	-0.2777***	-0.2800***	-0.2787***	-0.2777***	-0.2800***	-0.2787***	-0.2777***
	(0.0599)	(0.0598)	(0.0598)	(0.0599)	(0.0598)	(0.0598)	(0.0599)	(0.0598)	(0.0598)	(0.0599)	(0.0598)	(0.0598)
Employed	0.1320	0.1326	0.1324	0.1426**	0.1431**	0.1424**	0.1431***	0.1432***	0.1422***	0.1036*	0.1036*	0.1019*
	(0.1304)	(0.1304)	(0.1303)	(0.0499)	(0.0499)	(0.0499)	(0.0307)	(0.0307)	(0.0308)	(0.0454)	(0.0454)	(0.0454)
Self-employed	0.0012	0.0007	0.0037	0.1601*	0.1595*	0.1620*	0.2605***	0.2600***	0.2592***	0.2713***	0.2708***	0.2679***
	(0.1729)	(0.1729)	(0.1729)	(0.0711)	(0.0711)	(0.0711)	(0.0419)	(0.0419)	(0.0419)	(0.0586)	(0.0586)	(0.0586)
Gov. employed training	-0.5458	-0.5478	-0.5425	0.0589	0.0563	0.0611	-0.0121	-0.0140	-0.0126	0.2289	0.2277	0.2256
	(0.3918)	(0.3917)	(0.3917)	(0.2111)	(0.2107)	(0.2107)	(0.1962)	(0.1957)	(0.1944)	(0.3242)	(0.3238)	(0.3228)
Student	-0.6352	-0.6338	-0.6433	-0.3319	-0.3300	-0.3339	0.2437*	0.2445*	0.2410*	0.2874*	0.2878*	0.2846*
	(0.4335)	(0.4339)	(0.4340)	(0.2116)	(0.2117)	(0.2119)	(0.1191)	(0.1191)	(0.1194)	(0.1387)	(0.1388)	(0.1387)
Retired	-0.4950***	-0.4946***	-0.4955***	-0.1408*	-0.1403*	-0.1395*	0.0693+	0.0695+	0.0696+	0.0966	0.0966	0.0960
	(0.1409)	(0.1409)	(0.1410)	(0.0625)	(0.0625)	(0.0625)	(0.0413)	(0.0413)	(0.0414)	(0.0620)	(0.0620)	(0.0620)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3
Disabled, not working	-1.8754***	-1.8753***	-1.8753***	-1.7591***	-1.7589***	-1.7589***	-1.5413***	-1.5411***	-1.5440***	-1.5727***	-1.5727***	-1.5807***
	(0.0949)	(0.0949)	(0.0950)	(0.0431)	(0.0431)	(0.0431)	(0.0480)	(0.0480)	(0.0480)	(0.1168)	(0.1168)	(0.1171)
Length of time at address:												
12 mths but less than 2 years	-0.0634	-0.0640	-0.0636	-0.0634	-0.0640	-0.0636	-0.0634	-0.0640	-0.0636	-0.0634	-0.0640	-0.0636
	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)	(0.0458)
2 years but less than 3 years	-0.0726	-0.0726	-0.0734	-0.0726	-0.0726	-0.0734	-0.0726	-0.0726	-0.0734	-0.0726	-0.0726	-0.0734
	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)	(0.0474)
3 years but less than 5 years	-0.0783+	-0.0787+	-0.0784+	-0.0783+	-0.0787+	-0.0784+	-0.0783+	-0.0787+	-0.0784+	-0.0783+	-0.0787+	-0.0784+
	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)	(0.0411)
5 years but less than 10 years	-0.0791*	-0.0798*	-0.0792*	-0.0791*	-0.0798*	-0.0792*	-0.0791*	-0.0798*	-0.0792*	-0.0791*	-0.0798*	-0.0792*
	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)	(0.0379)
10 years or longer	-0.1250***	-0.1258***	-0.1252***	-0.1250***	-0.1258***	-0.1252***	-0.1250***	-0.1258***	-0.1252***	-0.1250***	-0.1258***	-0.1252***
	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)	(0.0368)
Ex-smoker	0.2643***	0.2643***	0.2650***	0.2643***	0.2643***	0.2650***	0.2643***	0.2643***	0.2650***	0.2643***	0.2643***	0.2650***
	(0.0234)	(0.0234)	(0.0233)	(0.0234)	(0.0234)	(0.0233)	(0.0234)	(0.0234)	(0.0233)	(0.0234)	(0.0234)	(0.0233)
Never smoked	0.3400***	0.3402***	0.3405***	0.3400***	0.3402***	0.3405***	0.3400***	0.3402***	0.3405***	0.3400***	0.3402***	0.3405***
	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)	(0.0234)
Diff. reg wage	-0.0052		-0.0052	-0.0052		-0.0052	-0.0052		-0.0052	-0.0052		-0.0052
	(0.0070)		(0.0070)	(0.0070)		(0.0070)	(0.0070)		(0.0070)	(0.0070)		(0.0070)
Log regional unem	0.3716		0.3627	0.3716		0.3627	0.3716		0.3627	0.3716		0.3627
	(0.2688)		(0.2688)	(0.2688)		(0.2688)	(0.2688)		(0.2688)	(0.2688)		(0.2688)
Face-to-face interview	-0.0951+	-0.0971+	-0.0949+	-0.1783***	-0.1801***	-0.1789***	-0.2671***	-0.2686***	-0.2677***	-0.3026***	-0.3040***	-0.3036***
	(0.0551)	(0.0551)	(0.0551)	(0.0315)	(0.0315)	(0.0315)	(0.0226)	(0.0225)	(0.0226)	(0.0302)	(0.0302)	(0.0302)
North West		0.3078*			0.1097			0.2367**			0.1679+	
		(0.1196)			(0.0898)			(0.0818)			(0.0975)	
Yorkshire and The Humber	0.2255+	0.2147+	0.2238+	0.1946*	0.1837*	0.1931*	0.2386***	0.2276**	0.2367***	0.3104***	0.2995***	0.3080***
	(0.1178)	(0.1214)	(0.1178)	(0.0756)	(0.0814)	(0.0756)	(0.0623)	(0.0692)	(0.0623)	(0.0821)	(0.0877)	(0.0822)
East Midlands	0.2876*	0.2520+	0.2848+	0.2332*	0.1976+	0.2301*	0.1979*	0.1622	0.1947*	0.1415	0.1057	0.1383
	(0.1466)	(0.1509)	(0.1466)	(0.1055)	(0.1115)	(0.1056)	(0.0940)	(0.1011)	(0.0940)	(0.1117)	(0.1180)	(0.1117)
West Midlands	0.1399	0.1226	0.1377	0.1940*	0.1766+	0.1926*	0.1747*	0.1573*	0.1736*	0.0892	0.0718	0.0876
	(0.1262)	(0.1313)	(0.1262)	(0.0823)	(0.0904)	(0.0824)	(0.0682)	(0.0777)	(0.0682)	(0.0908)	(0.0978)	(0.0909)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3
East of England	0.3785*	0.2044	0.3744*	0.2390+	0.0651	0.2347	0.3763**	0.2027*	0.3731**	0.3202*	0.1466	0.3158*
	(0.1782)	(0.1447)	(0.1783)	(0.1437)	(0.0982)	(0.1437)	(0.1344)	(0.0840)	(0.1344)	(0.1457)	(0.1009)	(0.1457)
London	0.2854*	0.4520*	0.2849*	0.2212**	0.3877+	0.2195**	0.2361***	0.4027*	0.2348***	0.1448+	0.3116	0.1424+
	(0.1140)	(0.2179)	(0.1140)	(0.0739)	(0.1997)	(0.0739)	(0.0594)	(0.1949)	(0.0594)	(0.0813)	(0.2023)	(0.0814)
South East	0.4027*	0.2446*	0.3980*	0.2762+	0.1182+	0.2713+	0.4089**	0.2506***	0.4044**	0.3607*	0.2021**	0.3558*
	(0.1825)	(0.1159)	(0.1826)	(0.1575)	(0.0700)	(0.1575)	(0.1515)	(0.0556)	(0.1515)	(0.1600)	(0.0760)	(0.1600)
South West	0.3798*	0.1611	0.3737*	0.2974+	0.0796	0.2925+	0.4421**	0.2233**	0.4374**	0.4410**	0.2221*	0.4357**
	(0.1852)	(0.1307)	(0.1852)	(0.1592)	(0.0903)	(0.1592)	(0.1518)	(0.0771)	(0.1519)	(0.1608)	(0.0944)	(0.1609)
Wales	0.3771**	0.3885**	0.3758**	0.2566**	0.2681**	0.2550**	0.3001***	0.3115***	0.2990***	0.3191***	0.3306**	0.3168***
	(0.1209)	(0.1294)	(0.1209)	(0.0868)	(0.0989)	(0.0869)	(0.0771)	(0.0904)	(0.0771)	(0.0939)	(0.1051)	(0.0940)
Scotland	0.4137**	0.3119*	0.4105**	0.2739**	0.1727	0.2715**	0.3777***	0.2770*	0.3760***	0.4149***	0.3146*	0.4125***
	(0.1285)	(0.1527)	(0.1285)	(0.0997)	(0.1300)	(0.0997)	(0.0923)	(0.1249)	(0.0923)	(0.1068)	(0.1357)	(0.1068)
Northern Ireland												
Spring	-0.0397	-0.0402	-0.0401	-0.0397	-0.0402	-0.0401	-0.0397	-0.0402	-0.0401	-0.0397	-0.0402	-0.0401
	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)
Summer	0.0254	0.0250	0.0254	0.0254	0.0250	0.0254	0.0254	0.0250	0.0254	0.0254	0.0250	0.0254
	(0.0251)	(0.0251)	(0.0250)	(0.0251)	(0.0251)	(0.0250)	(0.0251)	(0.0251)	(0.0250)	(0.0251)	(0.0251)	(0.0250)
Autumn	-0.0108	-0.0109	-0.0112	-0.0108	-0.0109	-0.0112	-0.0108	-0.0109	-0.0112	-0.0108	-0.0109	-0.0112
	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)	(0.0251)
Residuals	2.1941***	2.1908***	2.1947***	2.0920***	2.0918***	2.0922***	1.3880***	1.3884***	1.3904***	1.0548***	1.0548***	1.0614***
	(0.2173)	(0.2169)	(0.2174)	(0.0845)	(0.0845)	(0.0845)	(0.0431)	(0.0431)	(0.0432)	(0.0706)	(0.0706)	(0.0706)
wage_st_dev		-0.0037			-0.0037			-0.0037			-0.0037	
		(0.0042)			(0.0042)			(0.0042)			(0.0042)	
unemp_st_dev		0.0675			0.0675			0.0675			0.0675	
		(0.0555)			(0.0555)			(0.0555)			(0.0555)	
Constant	8.5660***	9.4513***	8.6932***	6.3941***	7.2794***	6.2941***	2.6098***	3.4953***	2.5741***	-0.0677	0.8170***	-0.0805
	(0.8708)	(0.5998)	(0.9736)	(0.6996)	(0.3118)	(0.7108)	(0.6573)	(0.2168)	(0.6574)	(0.6701)	(0.2468)	(0.6701)
Observations	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616
ll	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04	-8.43e+04
chi2	19775	19782	20034	19775	19782	20034	19775	19782	20034	19775	19782	20034

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.7.3 Wellbeing of disabled individuals claiming benefits (CF - OLS) (complete results)

Variable	ls_cf_ben1	ls_cf_ben2	ls_cf_ben3	happy_cf_ben1	happy_cf_ben2	happy_cf_ben3	anxious_cf_ben1	anxious_cf_ben2	anxious_cf_ben3	worth_cf_ben1	worth_cf_ben2	worth_cf_ben3
PIP	0.0822+	0.1421***	0.0827+	0.1331*	0.1661**	0.1329*	-0.2454***	-0.3150***	-0.2452**	0.0732+	0.1109**	0.0743+
	(0.0435)	(0.0356)	(0.0435)	(0.0564)	(0.0483)	(0.0564)	(0.0744)	(0.0648)	(0.0744)	(0.0437)	(0.0365)	(0.0437)
*Disab*Benefit*	-3.8461***	-3.8298***	-3.7842***	-3.8547***	-3.8614***	-3.8042***	5.4022***	5.4364***	5.3977***	-2.5280**	-2.5154**	-2.4258**
	(0.8358)	(0.8362)	(0.8371)	(1.0253)	(1.0258)	(1.0277)	(1.3197)	(1.3197)	(1.3209)	(0.8349)	(0.8347)	(0.8361)
*PIP*Disab*Benefit*	-0.0925	-0.0916	-0.0894	-0.0362	-0.0358	-0.0342	0.0191	0.0185	0.0202	-0.0169	-0.0164	-0.0120
	(0.0836)	(0.0836)	(0.0836)	(0.1056)	(0.1056)	(0.1056)	(0.1354)	(0.1355)	(0.1354)	(0.0818)	(0.0818)	(0.0817)
Disab	0.9722**	0.9653**	0.9559*	1.0895*	1.0928*	1.0897*	-1.6898**	-1.7056**	-1.7015**	0.6349+	0.6295+	0.6060
	(0.3736)	(0.3738)	(0.3736)	(0.4594)	(0.4596)	(0.4594)	(0.5920)	(0.5920)	(0.5922)	(0.3736)	(0.3735)	(0.3735)
*PIP*Disab*	-0.0879+	-0.0879+	-0.0882+	-0.1277+	-0.1271+	-0.1276+	0.2403**	0.2384**	0.2393**	-0.0916+	-0.0916+	-0.0918+
	(0.0512)	(0.0512)	(0.0512)	(0.0671)	(0.0671)	(0.0671)	(0.0889)	(0.0890)	(0.0890)	(0.0533)	(0.0533)	(0.0533)
Benefits	2.2895***	2.2783***	2.2111***	2.3715***	2.3750***	2.3400***	-3.2976***	-3.3175***	-3.2797***	1.6330**	1.6246**	1.4777**
	(0.5231)	(0.5234)	(0.5252)	(0.6412)	(0.6415)	(0.6445)	(0.8259)	(0.8260)	(0.8286)	(0.5222)	(0.5221)	(0.5240)
*PIP*Benefits*	-0.0418	-0.0397	-0.0454	-0.0157	-0.0132	-0.0175	0.0249	0.0193	0.0247	-0.0483	-0.0471	-0.0546
	(0.0639)	(0.0639)	(0.0639)	(0.0830)	(0.0830)	(0.0830)	(0.1070)	(0.1070)	(0.1070)	(0.0607)	(0.0607)	(0.0606)
Female	0.0455	0.0463	.	-0.0523	-0.0524	.	0.4035***	0.4045***	.	0.2486***	0.2492***	.
	(0.0307)	(0.0307)	.	(0.0368)	(0.0368)	.	(0.0481)	(0.0481)	.	(0.0305)	(0.0305)	.
*Female*Disab*Benefits*			-0.1051			-0.0623			-0.1004			-0.1342+
			(0.0754)			(0.0929)			(0.1184)			(0.0750)
*Female*Disab*			0.0447			-0.0082			0.0844			0.0578
			(0.0446)			(0.0566)			(0.0748)			(0.0440)
*Female*Benefits*			0.1342*			0.0344			0.0346			0.2452***
			(0.0602)			(0.0757)			(0.0970)			(0.0599)
First regions	-0.0831	0.0490	-0.0828	0.0288	0.0197	0.0283	-0.0094	0.0508	-0.0078	-0.0319	.	-0.0318
	(0.0693)	(0.0800)	(0.0693)	(0.0836)	(0.0973)	(0.0836)	(0.1048)	(0.1222)	(0.1048)	(0.0686)	.	(0.0686)
Married	0.6699***	0.6703***	0.6695***	0.4708***	0.4707***	0.4711***	-0.1297***	-0.1292***	-0.1307***	0.4548***	0.4551***	0.4542***
	(0.0224)	(0.0224)	(0.0224)	(0.0269)	(0.0269)	(0.0269)	(0.0338)	(0.0338)	(0.0338)	(0.0217)	(0.0217)	(0.0217)
Age	-0.0862***	-0.0863***	-0.0868***	-0.0689***	-0.0689***	-0.0690***	0.0766***	0.0766***	0.0768***	-0.0435***	-0.0436***	-0.0449***
	(0.0059)	(0.0060)	(0.0060)	(0.0071)	(0.0071)	(0.0071)	(0.0090)	(0.0090)	(0.0090)	(0.0058)	(0.0058)	(0.0058)

Variable	ls_cf_ben1	ls_cf_ben2	ls_cf_ben3	happy_cf_ben1	happy_cf_ben2	happy_cf_ben3	anxious_cf_ben1	anxious_cf_ben2	anxious_cf_ben3	worth_cf_ben1	worth_cf_ben2	worth_cf_ben3
Age squared	0.0009***	0.0009***	0.0009***	0.0008***	0.0008***	0.0008***	-0.0008***	-0.0008***	-0.0009***	0.0005***	0.0005***	0.0006***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.0001	-0.0002	-0.0010	0.0633+	0.0633+	0.0633+	-0.0863+	-0.0861+	-0.0865+	0.0165	0.0164	0.0147
	(0.0293)	(0.0293)	(0.0293)	(0.0359)	(0.0359)	(0.0359)	(0.0472)	(0.0472)	(0.0472)	(0.0286)	(0.0286)	(0.0286)
GCE, A-level or equivalent	-0.0729**	-0.0731**	-0.0734**	-0.0256	-0.0259	-0.0256	-0.0643	-0.0634	-0.0648	-0.0624*	-0.0625*	-0.0632*
	(0.0257)	(0.0257)	(0.0257)	(0.0316)	(0.0316)	(0.0316)	(0.0409)	(0.0409)	(0.0409)	(0.0254)	(0.0254)	(0.0254)
GCSE grades A-C or equivalent*	-0.1313***	-0.1315***	-0.1314***	-0.0383	-0.0386	-0.0380	-0.0583	-0.0572	-0.0588	-0.0926***	-0.0927***	-0.0929***
	(0.0269)	(0.0269)	(0.0269)	(0.0318)	(0.0318)	(0.0319)	(0.0405)	(0.0405)	(0.0405)	(0.0264)	(0.0264)	(0.0264)
Other qualifications	-0.0140	-0.0141	-0.0137	0.0468	0.0465	0.0467	-0.1162*	-0.1156*	-0.1163*	0.0038	0.0038	0.0044
	(0.0340)	(0.0340)	(0.0340)	(0.0395)	(0.0395)	(0.0395)	(0.0487)	(0.0487)	(0.0487)	(0.0332)	(0.0332)	(0.0332)
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Educ_squared	0.0014	0.0014	0.0014	0.0003	0.0003	0.0003	-0.0035*	-0.0035*	-0.0035*	-0.0068***	-0.0068***	-0.0069***
	(0.0011)	(0.0011)	(0.0011)	(0.0013)	(0.0013)	(0.0013)	(0.0016)	(0.0016)	(0.0016)	(0.0011)	(0.0011)	(0.0011)
Age_left_FT_educ	-0.0160+	-0.0160+	-0.0161+	-0.0069	-0.0069	-0.0069	-0.0144	-0.0144	-0.0145	-0.0028	-0.0028	-0.0029
	(0.0083)	(0.0083)	(0.0083)	(0.0102)	(0.0102)	(0.0102)	(0.0126)	(0.0126)	(0.0126)	(0.0087)	(0.0088)	(0.0087)
Age_left_educ_squared	0.0005+	0.0005+	0.0005+	0.0004	0.0004	0.0004	0.0006	0.0006	0.0006	0.0000	0.0000	0.0000
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	-0.1902***	-0.1901***	-0.1909***	-0.0922**	-0.0918**	-0.0919**	0.1087**	0.1073**	0.1092**	-0.0932***	-0.0932***	-0.0952***
	(0.0252)	(0.0252)	(0.0252)	(0.0305)	(0.0305)	(0.0305)	(0.0399)	(0.0399)	(0.0399)	(0.0244)	(0.0244)	(0.0244)
Terraced	-0.1998	-0.1993	-0.1987	-0.1013	-0.1001	-0.1014	0.2024	0.1995	0.2040	-0.1035	-0.1034	-0.1018
	(0.1273)	(0.1273)	(0.1275)	(0.1609)	(0.1608)	(0.1609)	(0.1998)	(0.1998)	(0.1998)	(0.1178)	(0.1178)	(0.1180)
Flatmaisonette - purpose built	-0.2287***	-0.2283***	-0.2280***	-0.1732***	-0.1725***	-0.1731***	0.1475**	0.1451**	0.1483**	-0.0844*	-0.0842*	-0.0835*
	(0.0355)	(0.0355)	(0.0355)	(0.0427)	(0.0427)	(0.0427)	(0.0547)	(0.0547)	(0.0547)	(0.0351)	(0.0351)	(0.0351)
Flatmaiste - part hseconverted hse	-0.0626	-0.0633	-0.0625	-0.1473	-0.1474	-0.1467	0.0358	0.0351	0.0356	0.0209	0.0205	0.0207
	(0.1114)	(0.1114)	(0.1113)	(0.1253)	(0.1254)	(0.1253)	(0.1509)	(0.1509)	(0.1509)	(0.1121)	(0.1121)	(0.1118)
Gypsy,	-0.0423	-0.0566	-0.0431	-0.2992	-0.3057	-0.2990	0.7258	0.7444	0.7239	-0.4870	-0.4965	-0.4857

Variable	ls_cf_ben1	ls_cf_ben2	ls_cf_ben3	happy_cf_ben1	happy_cf_ben2	happy_cf_ben3	anxious_cf_ben1	anxious_cf_ben2	anxious_cf_ben3	worth_cf_ben1	worth_cf_ben2	worth_cf_ben3
Traveller/Irish Traveller												
	(0.5689)	(0.5709)	(0.5693)	(0.5906)	(0.5913)	(0.5899)	(0.6443)	(0.6448)	(0.6431)	(0.7088)	(0.7091)	(0.7104)
Mixed / Multiple ethnic groups	-0.1266	-0.1300	-0.1268	0.0456	0.0451	0.0463	0.1063	0.1071	0.1056	0.0994	0.0970	0.0988
	(0.1094)	(0.1095)	(0.1093)	(0.1192)	(0.1193)	(0.1193)	(0.1705)	(0.1708)	(0.1705)	(0.1079)	(0.1080)	(0.1078)
Indian	0.1222	0.1269	0.1228	0.2951*	0.2959*	0.2959*	-0.0367	-0.0385	-0.0383	-0.0168	-0.0135	-0.0150
	(0.1032)	(0.1031)	(0.1033)	(0.1221)	(0.1221)	(0.1222)	(0.1627)	(0.1627)	(0.1626)	(0.1001)	(0.1001)	(0.1002)
Pakistani	0.0695	0.0695	0.0714	0.0833	0.0837	0.0828	-0.0346	-0.0359	-0.0347	0.0996	0.0998	0.1038
	(0.1250)	(0.1250)	(0.1250)	(0.1472)	(0.1471)	(0.1472)	(0.1781)	(0.1780)	(0.1781)	(0.1208)	(0.1208)	(0.1210)
Bangladeshi	-0.1689	-0.1725	-0.1668	0.2073	0.2052	0.2079	-0.2038	-0.1970	-0.2029	-0.0883	-0.0905	-0.0846
	(0.1754)	(0.1756)	(0.1755)	(0.2107)	(0.2107)	(0.2107)	(0.2583)	(0.2579)	(0.2584)	(0.1585)	(0.1586)	(0.1585)
Chinese	0.1161	0.1142	0.1149	0.4776**	0.4763**	0.4796**	-0.3017	-0.3017	-0.3021	-0.2448	-0.2456	-0.2478
	(0.1468)	(0.1463)	(0.1468)	(0.1835)	(0.1832)	(0.1834)	(0.2929)	(0.2912)	(0.2933)	(0.1802)	(0.1801)	(0.1813)
Any other Asian background	0.0460	0.0467	0.0496	-0.0100	-0.0104	-0.0098	-0.2314	-0.2299	-0.2322	-0.0672	-0.0669	-0.0598
	(0.1093)	(0.1094)	(0.1093)	(0.1652)	(0.1650)	(0.1653)	(0.1895)	(0.1891)	(0.1894)	(0.1160)	(0.1160)	(0.1162)
Black/ African/Caribbean/Black British	-0.3378***	-0.3395***	-0.3385***	0.0553	0.0544	0.0556	-0.4131***	-0.4114***	-0.4122***	-0.0180	-0.0191	-0.0203
	(0.0704)	(0.0704)	(0.0704)	(0.0809)	(0.0810)	(0.0809)	(0.0998)	(0.0997)	(0.0998)	(0.0672)	(0.0673)	(0.0673)
Arab	0.1301	0.1280	0.1342	0.0300	0.0305	0.0281	0.1975	0.1977	0.1971	-0.0810	-0.0829	-0.0708
	(0.1974)	(0.1973)	(0.1973)	(0.2529)	(0.2529)	(0.2527)	(0.2970)	(0.2973)	(0.2973)	(0.2056)	(0.2057)	(0.2053)
Other ethnic group	-0.3649***	-0.3635***	-0.3631***	-0.3438**	-0.3440**	-0.3444**	0.0373	0.0388	0.0360	-0.3326**	-0.3317**	-0.3276**
	(0.1043)	(0.1043)	(0.1043)	(0.1302)	(0.1302)	(0.1303)	(0.1602)	(0.1602)	(0.1602)	(0.1108)	(0.1108)	(0.1108)
Christian (all denominations)	0.1688***	0.1684***	0.1687***	0.2314***	0.2312***	0.2314***	0.0300	0.0303	0.0301	0.2255***	0.2253***	0.2253***
	(0.0203)	(0.0203)	(0.0203)	(0.0246)	(0.0246)	(0.0246)	(0.0311)	(0.0311)	(0.0311)	(0.0201)	(0.0201)	(0.0201)
Buddhist	-0.0815	-0.0841	-0.0821	0.1967	0.1974	0.1957	0.6196**	0.6177**	0.6181**	0.1072	0.1051	0.1069
	(0.1549)	(0.1551)	(0.1551)	(0.1629)	(0.1630)	(0.1629)	(0.1937)	(0.1936)	(0.1938)	(0.1621)	(0.1620)	(0.1625)
Hindu	0.0763	0.0702	0.0753	0.1623	0.1616	0.1620	0.2758	0.2758	0.2773	0.2604*	0.2563*	0.2578*
	(0.1238)	(0.1237)	(0.1238)	(0.1512)	(0.1511)	(0.1512)	(0.1917)	(0.1917)	(0.1916)	(0.1173)	(0.1172)	(0.1173)
Jewish	-0.2182+	-0.2192+	-0.2191+	-0.2217	-0.2215	-0.2213	0.5590**	0.5590**	0.5584**	-0.1126	-0.1136	-0.1146

Variable	ls_cf_ben1	ls_cf_ben2	ls_cf_ben3	happy_cf_ben1	happy_cf_ben2	happy_cf_ben3	anxious_cf_ben1	anxious_cf_ben2	anxious_cf_ben3	worth_cf_ben1	worth_cf_ben2	worth_cf_ben3
	(0.1285)	(0.1285)	(0.1286)	(0.1631)	(0.1631)	(0.1632)	(0.2032)	(0.2030)	(0.2033)	(0.1249)	(0.1248)	(0.1253)
Muslim	0.2756**	0.2755**	0.2759**	0.1099	0.1101	0.1103	0.0735	0.0729	0.0734	0.1833*	0.1831*	0.1836*
	(0.0913)	(0.0912)	(0.0913)	(0.1114)	(0.1114)	(0.1113)	(0.1384)	(0.1383)	(0.1384)	(0.0915)	(0.0915)	(0.0915)
Sikh	-0.2261	-0.2267	-0.2292	-0.2057	-0.2059	-0.2064	0.4459+	0.4454+	0.4476+	0.0584	0.0583	0.0513
	(0.1648)	(0.1646)	(0.1647)	(0.1836)	(0.1836)	(0.1837)	(0.2368)	(0.2368)	(0.2367)	(0.1537)	(0.1537)	(0.1536)
Any other religion	-0.0586	-0.0596	-0.0579	0.2442**	0.2438**	0.2445**	0.2310*	0.2315*	0.2314*	0.1875**	0.1868**	0.1886**
	(0.0697)	(0.0696)	(0.0697)	(0.0751)	(0.0751)	(0.0751)	(0.0989)	(0.0989)	(0.0989)	(0.0688)	(0.0688)	(0.0687)
Employed	0.3116***	0.3120***	0.3104***	0.0784*	0.0781*	0.0786*	-0.0974*	-0.0966*	-0.0974*	0.1939***	0.1942***	0.1913***
	(0.0315)	(0.0315)	(0.0315)	(0.0374)	(0.0374)	(0.0374)	(0.0472)	(0.0472)	(0.0472)	(0.0307)	(0.0307)	(0.0307)
Self-employed	0.2411***	0.2426***	0.2401***	0.0886+	0.0887+	0.0901+	-0.0076	-0.0075	-0.0067	0.2977***	0.2987***	0.2943***
	(0.0438)	(0.0438)	(0.0438)	(0.0523)	(0.0523)	(0.0523)	(0.0673)	(0.0672)	(0.0672)	(0.0427)	(0.0427)	(0.0427)
Gov. employed training	-0.2771	-0.2706	-0.2677	0.1613	0.1630	0.1613	0.0766	0.0736	0.0749	-0.3773+	-0.3728+	-0.3565+
	(0.1928)	(0.1933)	(0.1930)	(0.2233)	(0.2235)	(0.2234)	(0.2457)	(0.2456)	(0.2457)	(0.1947)	(0.1945)	(0.1944)
Student	0.3686***	0.3693***	0.3668***	0.1167	0.1162	0.1160	0.2022	0.2034	0.2028	0.2747**	0.2753**	0.2711**
	(0.0930)	(0.0929)	(0.0929)	(0.1196)	(0.1196)	(0.1196)	(0.1505)	(0.1504)	(0.1505)	(0.0991)	(0.0991)	(0.0991)
Retired	0.7082***	0.7079***	0.6999***	0.5312***	0.5312***	0.5313***	-0.6399***	-0.6404***	-0.6362***	0.2480***	0.2477***	0.2285***
	(0.0401)	(0.0401)	(0.0404)	(0.0475)	(0.0475)	(0.0479)	(0.0627)	(0.0627)	(0.0632)	(0.0391)	(0.0391)	(0.0394)
Disabled, not working	-0.0801	-0.0823	-0.0787	-0.1714	-0.1709	-0.1755	0.0179	0.0142	0.0217	-0.5401***	-0.5417***	-0.5365***
	(0.1101)	(0.1101)	(0.1102)	(0.1334)	(0.1335)	(0.1336)	(0.1703)	(0.1704)	(0.1704)	(0.1100)	(0.1100)	(0.1101)
Length of time at address: 12 mths but less than 2 years	-0.0262	-0.0254	-0.0264	-0.0411	-0.0408	-0.0410	-0.0654	-0.0661	-0.0654	-0.0113	-0.0107	-0.0117
	(0.0462)	(0.0463)	(0.0463)	(0.0565)	(0.0565)	(0.0565)	(0.0716)	(0.0716)	(0.0716)	(0.0464)	(0.0464)	(0.0464)
2 years but less than 3 years	-0.0992*	-0.0985*	-0.0992*	-0.0523	-0.0523	-0.0523	-0.0729	-0.0725	-0.0733	-0.0516	-0.0511	-0.0514
	(0.0491)	(0.0491)	(0.0491)	(0.0603)	(0.0603)	(0.0603)	(0.0753)	(0.0753)	(0.0753)	(0.0496)	(0.0496)	(0.0496)
3 years but less than 5 years	-0.0463	-0.0449	-0.0463	-0.0785	-0.0780	-0.0784	-0.0973	-0.0982	-0.0975	-0.0090	-0.0080	-0.0089
	(0.0428)	(0.0428)	(0.0428)	(0.0515)	(0.0515)	(0.0515)	(0.0648)	(0.0648)	(0.0648)	(0.0434)	(0.0434)	(0.0434)
5 years but less than 10 years	-0.0995*	-0.0981*	-0.1000*	-0.0837+	-0.0831+	-0.0835+	-0.0339	-0.0348	-0.0343	-0.0363	-0.0354	-0.0373
	(0.0399)	(0.0399)	(0.0399)	(0.0483)	(0.0483)	(0.0483)	(0.0610)	(0.0609)	(0.0610)	(0.0404)	(0.0404)	(0.0404)

Variable	ls_cf_ben1	ls_cf_ben2	ls_cf_ben3	happy_cf_ben1	happy_cf_ben2	happy_cf_ben3	anxious_cf_ben1	anxious_cf_ben2	anxious_cf_ben3	worth_cf_ben1	worth_cf_ben2	worth_cf_ben3
10 years or longer	-0.1014**	-0.0997**	-0.1013**	-0.1120*	-0.1112*	-0.1117*	-0.0378	-0.0392	-0.0376	-0.0345	-0.0334	-0.0345
	(0.0381)	(0.0381)	(0.0381)	(0.0459)	(0.0459)	(0.0459)	(0.0571)	(0.0571)	(0.0571)	(0.0383)	(0.0383)	(0.0383)
Ex-smoker	0.3892***	0.3894***	0.3883***	0.3478***	0.3480***	0.3480***	-0.2957***	-0.2964***	-0.2957***	0.2923***	0.2924***	0.2903***
	(0.0246)	(0.0246)	(0.0246)	(0.0296)	(0.0296)	(0.0296)	(0.0370)	(0.0370)	(0.0370)	(0.0246)	(0.0246)	(0.0246)
Never smoked	0.4652***	0.4651***	0.4646***	0.4365***	0.4366***	0.4364***	-0.3310***	-0.3314***	-0.3310***	0.3549***	0.3548***	0.3536***
	(0.0250)	(0.0250)	(0.0250)	(0.0300)	(0.0300)	(0.0300)	(0.0370)	(0.0370)	(0.0370)	(0.0248)	(0.0249)	(0.0249)
Diff. reg wage	0.0116		0.0116	0.0107		0.0107	-0.0205+		-0.0205+	0.0062		0.0063
	(0.0072)		(0.0072)	(0.0087)		(0.0087)	(0.0110)		(0.0110)	(0.0071)		(0.0071)
Log regional unem	-0.5818*		-0.5791*	-0.1951		-0.1971	0.5327		0.5347	-0.3990		-0.3934
	(0.2717)		(0.2717)	(0.3279)		(0.3279)	(0.4140)		(0.4140)	(0.2659)		(0.2658)
Face-to-face interview	-0.1569***	-0.1523***	-0.1568***	-0.1141***	-0.1119***	-0.1143***	0.0196	0.0159	0.0197	-0.1461***	-0.1432***	-0.1458***
	(0.0184)	(0.0184)	(0.0184)	(0.0224)	(0.0224)	(0.0224)	(0.0288)	(0.0288)	(0.0288)	(0.0178)	(0.0178)	(0.0178)
North West	.	.	.	.	.	.	.	.	.	.	0.0639	.
	.	.	.	.	.	.	.	.	.	.	(0.0790)	.
Yorkshire and The Humber	-0.0635	0.0183	-0.0634	0.0105	0.0049	0.0100	-0.0147	0.0313	-0.0140	-0.0024	0.0564	-0.0024
	(0.0573)	(0.0646)	(0.0573)	(0.0686)	(0.0778)	(0.0686)	(0.0863)	(0.0984)	(0.0863)	(0.0560)	(0.0634)	(0.0560)
East Midlands	-0.1443	0.0445	-0.1444	0.0259	0.0316	0.0254	0.0857	0.1290	0.0876	-0.0577	0.0760	-0.0584
	(0.0910)	(0.0981)	(0.0910)	(0.1095)	(0.1190)	(0.1096)	(0.1376)	(0.1502)	(0.1377)	(0.0889)	(0.0964)	(0.0888)
West Midlands	-0.1663**	-0.0778	-0.1661**	-0.0575	-0.0651	-0.0578	-0.1435	-0.0837	-0.1429	-0.1658**	-0.1022	-0.1654**
	(0.0633)	(0.0731)	(0.0633)	(0.0762)	(0.0888)	(0.0762)	(0.0961)	(0.1128)	(0.0962)	(0.0617)	(0.0716)	(0.0617)
East of England	-0.2686*	-0.0444	-0.2678*	0.0003	0.0680	-0.0007	0.1473	0.0213	0.1491	-0.1623	-0.0107	-0.1612
	(0.1332)	(0.0789)	(0.1332)	(0.1597)	(0.0959)	(0.1597)	(0.2010)	(0.1228)	(0.2010)	(0.1306)	(0.0784)	(0.1305)
London	-0.0598	0.2160	-0.0607	0.0362	0.0037	0.0356	0.2001*	0.1537	0.2009*	-0.0592	0.1538	-0.0614
	(0.0536)	(0.1970)	(0.0536)	(0.0649)	(0.2350)	(0.0649)	(0.0819)	(0.2984)	(0.0819)	(0.0532)	(0.1972)	(0.0531)
South East	-0.3008*	0.0280	-0.3000*	-0.0875	-0.0068	-0.0882	0.2533	0.0266	0.2552	-0.1923	0.0377	-0.1912
	(0.1510)	(0.0498)	(0.1510)	(0.1822)	(0.0599)	(0.1822)	(0.2288)	(0.0758)	(0.2289)	(0.1479)	(0.0495)	(0.1479)
South West	-0.2898+	-0.0339	-0.2884+	-0.0387	0.0527	-0.0399	0.1299	-0.0706	0.1319	-0.1726	-0.0004	-0.1702
	(0.1529)	(0.0728)	(0.1529)	(0.1831)	(0.0877)	(0.1831)	(0.2302)	(0.1120)	(0.2302)	(0.1489)	(0.0733)	(0.1489)
Wales	-0.0406	0.1529+	-0.0400	0.0910	0.0875	0.0909	-0.0188	0.0131	-0.0173	0.0346	0.1749*	0.0352
	(0.0740)	(0.0887)	(0.0740)	(0.0892)	(0.1073)	(0.0892)	(0.1116)	(0.1338)	(0.1116)	(0.0728)	(0.0877)	(0.0728)

Variable	ls_cf_ben1	ls_cf_ben2	ls_cf_ben3	happy_cf_ben1	happy_cf_ben2	happy_cf_ben3	anxious_cf_ben1	anxious_cf_ben2	anxious_cf_ben3	worth_cf_ben1	worth_cf_ben2	worth_cf_ben3
Scotland	-0.0014	0.1264	-0.0011	0.0598	0.0818	0.0593	-0.0664	-0.0143	-0.0650	-0.0492	0.0348	-0.0490
	(0.0905)	(0.1232)	(0.0905)	(0.1092)	(0.1499)	(0.1092)	(0.1367)	(0.1903)	(0.1367)	(0.0890)	(0.1223)	(0.0890)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Spring	-0.0110	-0.0090	-0.0111	0.0778*	0.0785*	0.0777*	0.0656+	0.0643	0.0659+	0.0251	0.0263	0.0246
	(0.0260)	(0.0260)	(0.0260)	(0.0313)	(0.0313)	(0.0313)	(0.0396)	(0.0396)	(0.0396)	(0.0256)	(0.0256)	(0.0256)
Summer	0.0516*	0.0516*	0.0512*	0.1310***	0.1312***	0.1310***	-0.0011	-0.0017	-0.0005	0.0661*	0.0661*	0.0651*
	(0.0259)	(0.0259)	(0.0259)	(0.0312)	(0.0312)	(0.0312)	(0.0395)	(0.0395)	(0.0395)	(0.0258)	(0.0258)	(0.0258)
Autumn	0.0181	0.0180	0.0181	0.0181	0.0181	0.0181	0.1042**	0.1042**	0.1048**	0.0680**	0.0679**	0.0676**
	(0.0257)	(0.0257)	(0.0257)	(0.0308)	(0.0308)	(0.0308)	(0.0389)	(0.0389)	(0.0389)	(0.0254)	(0.0254)	(0.0254)
*Residuals (Disab*Benefits)*	3.8432***	3.8265***	3.8411***	3.7880***	3.7945***	3.7840***	-5.4320***	-5.4660***	-5.3828***	2.4896**	2.4767**	2.4630**
	(0.8375)	(0.8379)	(0.8384)	(1.0267)	(1.0272)	(1.0284)	(1.3215)	(1.3216)	(1.3222)	(0.8362)	(0.8360)	(0.8364)
Residuals (Disab)	0.3188***	0.3196***	0.3179***	0.1890*	0.1881*	0.1908*	-0.0957	-0.0924	-0.0992	0.2327***	0.2335***	0.2314***
	(0.0678)	(0.0677)	(0.0678)	(0.0843)	(0.0843)	(0.0844)	(0.1087)	(0.1087)	(0.1087)	(0.0676)	(0.0675)	(0.0676)
Wage_st_dev		-0.0048			0.0005			0.0020			-0.0037	
		(0.0043)			(0.0051)			(0.0065)			(0.0043)	
Unemp_st_dev		0.0618			-0.0262			0.0868			0.0474	
		(0.0558)			(0.0677)			(0.0852)			(0.0554)	
Constant	9.3459***	8.0469***	9.3752***	7.6725***	7.2507***	7.6757***	1.8260+	2.8474***	1.8195+	8.3687***	7.4835***	8.4327***
	(0.6747)	(0.3018)	(0.6751)	(0.8218)	(0.3727)	(0.8224)	(1.0313)	(0.4727)	(1.0315)	(0.6713)	(0.3084)	(0.6714)
Observations	74206	74206	74206	74185	74185	74185	74110	74110	74110	73981	73981	73981
R-squared	0.18	0.18	0.18	0.097	0.097	0.097	0.056	0.056	0.056	0.14	0.14	0.14
ll	-1.54e+05	-1.54e+05	-1.54e+05	-1.68e+05	-1.68e+05	-1.68e+05	-1.86e+05	-1.86e+05	-1.86e+05	-1.52e+05	-1.52e+05	-1.52e+05

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.7.4 Self-assessed health – disabled individuals claiming benefits (CF - PPO) (complete results)

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
PIP	-0.3932	-0.4236	-0.3003	0.5219+	0.4912+	0.5247+	0.1875**	0.1563*	0.1873**	0.1192+	0.0882	0.1174+
	(1.1737)	(1.1734)	(1.2599)	(0.2748)	(0.2740)	(0.2755)	(0.0658)	(0.0609)	(0.0658)	(0.0634)	(0.0580)	(0.0634)
Disab_benefit	-16.2397***	-16.2644***	-15.5765***	-16.7473***	-16.8806***	-16.5882***	-17.2183***	-17.1710***	-17.0324***	-14.5161***	-14.6019***	-14.4774***
	(1.8452)	(1.8480)	(1.9109)	(1.1327)	(1.1332)	(1.1618)	(0.8703)	(0.8700)	(0.8724)	(1.1484)	(1.1509)	(1.1550)
PIP*Disab_benefit	-0.8452	-0.8445	-0.6597	0.5117	0.5120	0.5194	-0.0545	-0.0554	-0.0488	0.1140	0.1125	0.1078
	(1.4522)	(1.4522)	(1.5648)	(0.4337)	(0.4337)	(0.4351)	(0.1156)	(0.1156)	(0.1157)	(0.1462)	(0.1462)	(0.1463)
Disab	3.0107**	3.0227**	2.6549**	4.0040***	4.0640***	4.0197***	5.5582***	5.5361***	5.5514***	4.7788***	4.8159***	4.8072***
	(1.0002)	(1.0017)	(0.9936)	(0.5241)	(0.5242)	(0.5341)	(0.3905)	(0.3903)	(0.3907)	(0.5117)	(0.5126)	(0.5124)
PIP*Disab	0.2980	0.2963	0.2055	-0.6661*	-0.6669*	-0.6680*	-0.2189**	-0.2189**	-0.2185**	-0.2005*	-0.2002*	-0.1961*
	(1.1862)	(1.1862)	(1.2720)	(0.2825)	(0.2825)	(0.2832)	(0.0764)	(0.0763)	(0.0764)	(0.0967)	(0.0967)	(0.0968)
Benefits	9.2444***	9.2604***	8.6059***	10.2356***	10.3200***	10.1175***	10.6515***	10.6219***	10.4897***	9.0915***	9.1452***	9.1146***
	(1.2839)	(1.2861)	(1.3810)	(0.7288)	(0.7291)	(0.7709)	(0.5446)	(0.5443)	(0.5472)	(0.7180)	(0.7196)	(0.7211)
PIP*Benefits	0.8675	0.8657	0.6814	-0.4665	-0.4684	-0.4750	0.0224	0.0217	0.0162	-0.0601	-0.0603	-0.0558
	(1.4408)	(1.4408)	(1.5539)	(0.4262)	(0.4262)	(0.4275)	(0.0966)	(0.0966)	(0.0967)	(0.0935)	(0.0935)	(0.0935)
First regions	0.4886***		0.4873***	0.2703**		0.2695**	0.4073***		0.4054***	0.2978**		0.2954**
	(0.1164)		(0.1164)	(0.0825)		(0.0825)	(0.0732)		(0.0732)	(0.0911)		(0.0912)
Married	-0.1953***	-0.1955***	-0.1942***	-0.1953***	-0.1955***	-0.1942***	-0.1953***	-0.1955***	-0.1942***	-0.1953***	-0.1955***	-0.1942***
	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)	(0.0219)
Female	-0.4023***	-0.4032***	-1.2019	-0.3640***	-0.3681***	-0.2421	-0.4509***	-0.4495***	-0.4335***	-0.4528***	-0.4548***	-0.3515***
	(0.0704)	(0.0705)	(1.1218)	(0.0435)	(0.0436)	(0.2482)	(0.0338)	(0.0338)	(0.0558)	(0.0453)	(0.0454)	(0.0589)
Age	0.0069	0.0071	0.0067	-0.0150	-0.0145	-0.0152	-0.0067	-0.0067	-0.0075	0.0002	0.0005	0.0014
	(0.0200)	(0.0200)	(0.0200)	(0.0104)	(0.0104)	(0.0104)	(0.0069)	(0.0069)	(0.0069)	(0.0084)	(0.0084)	(0.0084)
Age squared	-0.0002	-0.0002	-0.0002	0.0000	0.0000	0.0001	-0.0002*	-0.0002*	-0.0001*	-0.0002*	-0.0002*	-0.0002*
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Higher educ	-0.2795**	-0.2795**	-0.2797**	-0.1979***	-0.1990***	-0.1978***	-0.0811*	-0.0809*	-0.0814*	-0.1166*	-0.1171*	-0.1147*
	(0.1013)	(0.1013)	(0.1014)	(0.0579)	(0.0579)	(0.0579)	(0.0373)	(0.0373)	(0.0373)	(0.0473)	(0.0473)	(0.0473)
GCE, A-level or equivalent	-0.4470***	-0.4469***	-0.4475***	-0.3613***	-0.3628***	-0.3608***	-0.2545***	-0.2537***	-0.2539***	-0.3403***	-0.3411***	-0.3386***
	(0.0757)	(0.0757)	(0.0760)	(0.0452)	(0.0452)	(0.0452)	(0.0321)	(0.0321)	(0.0321)	(0.0421)	(0.0421)	(0.0421)
GCSE grades A-C or equivalent*	-0.3568***	-0.3573***	-0.3564***	-0.2420***	-0.2439***	-0.2411***	-0.2580***	-0.2569***	-0.2571***	-0.3277***	-0.3283***	-0.3263***

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3	sah_iv1	sah_iv2	sah_iv3
	(0.0706)	(0.0707)	(0.0707)	(0.0423)	(0.0423)	(0.0423)	(0.0313)	(0.0313)	(0.0313)	(0.0427)	(0.0427)	(0.0427)
Other qualifications	-0.0614	-0.0613	-0.0609	-0.0045	-0.0048	-0.0046	-0.0455	-0.0447	-0.0460	-0.1457*	-0.1452*	-0.1458*
	(0.0756)	(0.0757)	(0.0756)	(0.0458)	(0.0458)	(0.0458)	(0.0376)	(0.0376)	(0.0376)	(0.0582)	(0.0582)	(0.0582)
Educ_squared	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***	-0.0103***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Age_left_FT_educ	-0.0315**	-0.0316**	-0.0315**	-0.0280**	-0.0281**	-0.0279**	-0.0177*	-0.0178*	-0.0177*	-0.0318***	-0.0320***	-0.0318***
	(0.0108)	(0.0108)	(0.0108)	(0.0090)	(0.0090)	(0.0090)	(0.0083)	(0.0083)	(0.0083)	(0.0088)	(0.0088)	(0.0088)
Age_left_educ_squared	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***	0.0010***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
House or bungalow - semi detached	0.0856**	0.0855**	0.0856**	0.0856**	0.0855**	0.0856**	0.0856**	0.0855**	0.0856**	0.0856**	0.0855**	0.0856**
	(0.0263)	(0.0263)	(0.0262)	(0.0263)	(0.0263)	(0.0262)	(0.0263)	(0.0263)	(0.0262)	(0.0263)	(0.0263)	(0.0262)
Terraced	0.4699***	0.4704***	0.4681***	0.4699***	0.4704***	0.4681***	0.4699***	0.4704***	0.4681***	0.4699***	0.4704***	0.4681***
	(0.1379)	(0.1380)	(0.1378)	(0.1379)	(0.1380)	(0.1378)	(0.1379)	(0.1380)	(0.1378)	(0.1379)	(0.1380)	(0.1378)
Flatmaisonette - purpose built	0.1332***	0.1334***	0.1327***	0.1332***	0.1334***	0.1327***	0.1332***	0.1334***	0.1327***	0.1332***	0.1334***	0.1327***
	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)	(0.0355)
Flatmaiste - part hseconverted hse	-0.3720***	-0.3716***	-0.3708***	-0.3720***	-0.3716***	-0.3708***	-0.3720***	-0.3716***	-0.3708***	-0.3720***	-0.3716***	-0.3708***
	(0.1042)	(0.1042)	(0.1041)	(0.1042)	(0.1042)	(0.1041)	(0.1042)	(0.1042)	(0.1041)	(0.1042)	(0.1042)	(0.1041)
Gypsy, Traveller/Irish Traveller	0.6138+	0.6170+	0.6141+	0.6138+	0.6170+	0.6141+	0.6138+	0.6170+	0.6141+	0.6138+	0.6170+	0.6141+
	(0.3660)	(0.3644)	(0.3642)	(0.3660)	(0.3644)	(0.3642)	(0.3660)	(0.3644)	(0.3642)	(0.3660)	(0.3644)	(0.3642)
Mixed / Multiple ethnic groups	-0.0327	-0.0355	-0.0317	-0.0327	-0.0355	-0.0317	-0.0327	-0.0355	-0.0317	-0.0327	-0.0355	-0.0317
	(0.0958)	(0.0959)	(0.0958)	(0.0958)	(0.0959)	(0.0958)	(0.0958)	(0.0959)	(0.0958)	(0.0958)	(0.0959)	(0.0958)
Indian	-0.0721	-0.0690	-0.0689	-0.0721	-0.0690	-0.0689	-0.0721	-0.0690	-0.0689	-0.0721	-0.0690	-0.0689
	(0.1047)	(0.1048)	(0.1045)	(0.1047)	(0.1048)	(0.1045)	(0.1047)	(0.1048)	(0.1045)	(0.1047)	(0.1048)	(0.1045)
Pakistani	-0.1583	-0.1584	-0.1596	-0.1583	-0.1584	-0.1596	-0.1583	-0.1584	-0.1596	-0.1583	-0.1584	-0.1596
	(0.1103)	(0.1103)	(0.1100)	(0.1103)	(0.1103)	(0.1100)	(0.1103)	(0.1103)	(0.1100)	(0.1103)	(0.1103)	(0.1100)
Bangladeshi	-0.0573	-0.0541	-0.0550	-0.0573	-0.0541	-0.0550	-0.0573	-0.0541	-0.0550	-0.0573	-0.0541	-0.0550
	(0.1576)	(0.1575)	(0.1570)	(0.1576)	(0.1575)	(0.1570)	(0.1576)	(0.1575)	(0.1570)	(0.1576)	(0.1575)	(0.1570)
Chinese	0.1694	0.1722	0.1730	0.1694	0.1722	0.1730	0.1694	0.1722	0.1730	0.1694	0.1722	0.1730
	(0.1691)	(0.1686)	(0.1692)	(0.1691)	(0.1686)	(0.1692)	(0.1691)	(0.1686)	(0.1692)	(0.1691)	(0.1686)	(0.1692)
Any other Asian background	-0.7712***	-0.7718***	-0.7688***	-0.7712***	-0.7718***	-0.7688***	-0.7712***	-0.7718***	-0.7688***	-0.7712***	-0.7718***	-0.7688***

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.1206)	(0.1207)	(0.1204)	(0.1206)	(0.1207)	(0.1204)	(0.1206)	(0.1207)	(0.1204)	(0.1206)	(0.1207)	(0.1204)
Black/ African/Caribbean/Black British	-0.0310	-0.0299	-0.0311	-0.0310	-0.0299	-0.0311	-0.0310	-0.0299	-0.0311	-0.0310	-0.0299	-0.0311
	(0.0608)	(0.0607)	(0.0608)	(0.0608)	(0.0607)	(0.0608)	(0.0608)	(0.0607)	(0.0608)	(0.0608)	(0.0607)	(0.0608)
Arab	0.0128	0.0105	0.0106	0.0128	0.0105	0.0106	0.0128	0.0105	0.0106	0.0128	0.0105	0.0106
	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)	(0.1756)
Other ethnic group	-0.4436***	-0.4433***	-0.4433***	-0.4436***	-0.4433***	-0.4433***	-0.4436***	-0.4433***	-0.4433***	-0.4436***	-0.4433***	-0.4433***
	(0.0948)	(0.0948)	(0.0947)	(0.0948)	(0.0948)	(0.0947)	(0.0948)	(0.0948)	(0.0947)	(0.0948)	(0.0948)	(0.0947)
Christian (all denominations)	0.0703***	0.0708***	0.0698***	0.0703***	0.0708***	0.0698***	0.0703***	0.0708***	0.0698***	0.0703***	0.0708***	0.0698***
	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)
Buddhist	0.3266+	0.3238+	0.3246+	0.3266+	0.3238+	0.3246+	0.3266+	0.3238+	0.3246+	0.3266+	0.3238+	0.3246+
	(0.1694)	(0.1694)	(0.1695)	(0.1694)	(0.1694)	(0.1695)	(0.1694)	(0.1694)	(0.1695)	(0.1694)	(0.1694)	(0.1695)
Hindu	0.1575	0.1543	0.1556	0.1575	0.1543	0.1556	0.1575	0.1543	0.1556	0.1575	0.1543	0.1556
	(0.1245)	(0.1245)	(0.1244)	(0.1245)	(0.1245)	(0.1244)	(0.1245)	(0.1245)	(0.1244)	(0.1245)	(0.1245)	(0.1244)
Jewish	-0.4638***	-0.4646***	-0.4630***	-0.4638***	-0.4646***	-0.4630***	-0.4638***	-0.4646***	-0.4630***	-0.4638***	-0.4646***	-0.4630***
	(0.1263)	(0.1262)	(0.1264)	(0.1263)	(0.1262)	(0.1264)	(0.1263)	(0.1262)	(0.1264)	(0.1263)	(0.1262)	(0.1264)
Muslim	-0.3084***	-0.3093***	-0.3076***	-0.3084***	-0.3093***	-0.3076***	-0.3084***	-0.3093***	-0.3076***	-0.3084***	-0.3093***	-0.3076***
	(0.0821)	(0.0822)	(0.0819)	(0.0821)	(0.0822)	(0.0819)	(0.0821)	(0.0822)	(0.0819)	(0.0821)	(0.0822)	(0.0819)
Sikh	-0.0020	-0.0011	-0.0059	-0.0020	-0.0011	-0.0059	-0.0020	-0.0011	-0.0059	-0.0020	-0.0011	-0.0059
	(0.1536)	(0.1537)	(0.1537)	(0.1536)	(0.1537)	(0.1537)	(0.1536)	(0.1537)	(0.1537)	(0.1536)	(0.1537)	(0.1537)
Any other religion	0.0654	0.0669	0.0648	0.0654	0.0669	0.0648	0.0654	0.0669	0.0648	0.0654	0.0669	0.0648
	(0.0618)	(0.0617)	(0.0618)	(0.0618)	(0.0617)	(0.0618)	(0.0618)	(0.0617)	(0.0618)	(0.0618)	(0.0617)	(0.0618)
Employed	-0.1353	-0.1347	-0.1353	-0.0990+	-0.1003+	-0.0981+	-0.1129***	-0.1116***	-0.1132***	-0.1052*	-0.1062*	-0.1025*
	(0.1327)	(0.1329)	(0.1325)	(0.0526)	(0.0526)	(0.0526)	(0.0337)	(0.0337)	(0.0338)	(0.0493)	(0.0493)	(0.0493)
Self-employed	-0.5043**	-0.5050**	-0.4996**	-0.2995***	-0.3037***	-0.2925***	-0.2230***	-0.2217***	-0.2215***	-0.1356*	-0.1385*	-0.1345+
	(0.1801)	(0.1803)	(0.1814)	(0.0780)	(0.0780)	(0.0783)	(0.0492)	(0.0491)	(0.0491)	(0.0689)	(0.0690)	(0.0688)
Gov. employed training	-0.4236	-0.4224	-0.4216	0.1665	0.1687	0.1667	0.0941	0.0951	0.1009	0.3072	0.3107	0.2925
	(0.3872)	(0.3869)	(0.3870)	(0.2119)	(0.2116)	(0.2114)	(0.1941)	(0.1935)	(0.1912)	(0.3206)	(0.3202)	(0.3185)
Student	-0.7574+	-0.7554+	-0.7578+	-0.4317*	-0.4283*	-0.4321*	0.1517	0.1533	0.1495	0.1731	0.1751	0.1741
	(0.4347)	(0.4350)	(0.4349)	(0.2127)	(0.2129)	(0.2128)	(0.1210)	(0.1209)	(0.1212)	(0.1394)	(0.1395)	(0.1396)
Retired	-0.1330	-0.1319	-0.1340	0.2036**	0.2067**	0.2057**	0.4219***	0.4218***	0.4129***	0.4008***	0.4024***	0.4119***

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.1445)	(0.1444)	(0.1447)	(0.0664)	(0.0665)	(0.0668)	(0.0455)	(0.0455)	(0.0460)	(0.0651)	(0.0651)	(0.0655)
Disabled, not working	0.2601	0.2635	0.2558	0.2415+	0.2585+	0.2354+	0.5901***	0.5848***	0.5767***	0.2430	0.2549	0.2158
	(0.2282)	(0.2278)	(0.2284)	(0.1426)	(0.1426)	(0.1426)	(0.1182)	(0.1182)	(0.1183)	(0.1872)	(0.1876)	(0.1896)
Length of time at address:												
12 mths but less than 2 years	-0.1322**	-0.1326**	-0.1318**	-0.1322**	-0.1326**	-0.1318**	-0.1322**	-0.1326**	-0.1318**	-0.1322**	-0.1326**	-0.1318**
	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)	(0.0461)
2 years but less than 3 years	-0.2190***	-0.2189***	-0.2189***	-0.2190***	-0.2189***	-0.2189***	-0.2190***	-0.2189***	-0.2189***	-0.2190***	-0.2189***	-0.2189***
	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)	(0.0481)
3 years but less than 5 years	-0.1551***	-0.1556***	-0.1549***	-0.1551***	-0.1556***	-0.1549***	-0.1551***	-0.1556***	-0.1549***	-0.1551***	-0.1556***	-0.1549***
	(0.0414)	(0.0413)	(0.0413)	(0.0414)	(0.0413)	(0.0413)	(0.0414)	(0.0413)	(0.0413)	(0.0414)	(0.0413)	(0.0413)
5 years but less than 10 years	-0.2586***	-0.2597***	-0.2578***	-0.2586***	-0.2597***	-0.2578***	-0.2586***	-0.2597***	-0.2578***	-0.2586***	-0.2597***	-0.2578***
	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)	(0.0391)
10 years or longer	-0.1854***	-0.1861***	-0.1852***	-0.1854***	-0.1861***	-0.1852***	-0.1854***	-0.1861***	-0.1852***	-0.1854***	-0.1861***	-0.1852***
	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)	(0.0370)
Ex-smoker	0.2843***	0.2837***	0.2845***	0.2843***	0.2837***	0.2845***	0.2843***	0.2837***	0.2845***	0.2843***	0.2837***	0.2845***
	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)	(0.0235)
Never smoked	0.3986***	0.3981***	0.3983***	0.3986***	0.3981***	0.3983***	0.3986***	0.3981***	0.3983***	0.3986***	0.3981***	0.3983***
	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)	(0.0237)
Diff. reg wage	-0.0182**		-0.0182*	-0.0182**		-0.0182*	-0.0182**		-0.0182*	-0.0182**		-0.0182*
	(0.0071)		(0.0071)	(0.0071)		(0.0071)	(0.0071)		(0.0071)	(0.0071)		(0.0071)
Log regional unem	-0.0370		-0.0405	-0.0370		-0.0405	-0.0370		-0.0405	-0.0370		-0.0405
	(0.2705)		(0.2704)	(0.2705)		(0.2704)	(0.2705)		(0.2704)	(0.2705)		(0.2704)
Face-to-face interview	-0.0809	-0.0825	-0.0813	-0.1685***	-0.1694***	-0.1690***	-0.2571***	-0.2586***	-0.2576***	-0.3086***	-0.3094***	-0.3097***
	(0.0557)	(0.0557)	(0.0557)	(0.0318)	(0.0318)	(0.0318)	(0.0227)	(0.0227)	(0.0227)	(0.0304)	(0.0304)	(0.0304)
Yorkshire and The Humber	0.2179+	0.3270**	0.2170+	0.1790*	0.2879***	0.1785*	0.2200***	0.3282***	0.2188***	0.2901***	0.3988***	0.2890***
	(0.1179)	(0.1218)	(0.1179)	(0.0758)	(0.0818)	(0.0758)	(0.0627)	(0.0698)	(0.0627)	(0.0824)	(0.0882)	(0.0824)
East Midlands	0.2711+	0.4635**	0.2701+	0.2101*	0.4025***	0.2091*	0.1842+	0.3753***	0.1814+	0.1115	0.3033*	0.1112
	(0.1469)	(0.1517)	(0.1470)	(0.1059)	(0.1124)	(0.1059)	(0.0945)	(0.1023)	(0.0945)	(0.1120)	(0.1192)	(0.1120)
West Midlands	0.1422	0.2681*	0.1412	0.1918*	0.3174***	0.1914*	0.1801**	0.3045***	0.1792**	0.0809	0.2061*	0.0802
	(0.1265)	(0.1320)	(0.1265)	(0.0825)	(0.0909)	(0.0825)	(0.0686)	(0.0785)	(0.0686)	(0.0911)	(0.0986)	(0.0911)
East of England	0.2986+	0.3583*	0.2967+	0.1512	0.2113*	0.1498	0.2925*	0.3515***	0.2903*	0.2189	0.2788**	0.2173

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
	(0.1789)	(0.1454)	(0.1788)	(0.1442)	(0.0988)	(0.1441)	(0.1349)	(0.0848)	(0.1349)	(0.1461)	(0.1018)	(0.1461)
London	0.3498**	0.6553**	0.3495**	0.2761***	0.5823**	0.2748***	0.3043***	0.6083**	0.3018***	0.1808*	0.4863*	0.1803*
	(0.1150)	(0.2193)	(0.1150)	(0.0746)	(0.2009)	(0.0746)	(0.0600)	(0.1958)	(0.0600)	(0.0820)	(0.2033)	(0.0821)
South East	0.2370	0.3394**	0.2347	0.1016	0.2040**	0.1000	0.2385	0.3397***	0.2360	0.1840	0.2853***	0.1827
	(0.1832)	(0.1164)	(0.1833)	(0.1583)	(0.0704)	(0.1583)	(0.1522)	(0.0563)	(0.1522)	(0.1606)	(0.0765)	(0.1606)
South West	0.3587+	0.3825**	0.3557+	0.2624	0.2878**	0.2605	0.4152**	0.4374***	0.4123**	0.3870*	0.4105***	0.3833*
	(0.1868)	(0.1333)	(0.1868)	(0.1599)	(0.0913)	(0.1599)	(0.1523)	(0.0783)	(0.1523)	(0.1614)	(0.0959)	(0.1614)
Wales	0.4387***	0.6455***	0.4383***	0.3092***	0.5164***	0.3091***	0.3607***	0.5663***	0.3599***	0.3555***	0.5623***	0.3524***
	(0.1220)	(0.1313)	(0.1220)	(0.0873)	(0.1003)	(0.0873)	(0.0775)	(0.0917)	(0.0775)	(0.0943)	(0.1066)	(0.0944)
Scotland	0.4657***	0.5732***	0.4640***	0.3136**	0.4224**	0.3130**	0.4294***	0.5365***	0.4277***	0.4370***	0.5459***	0.4357***
	(0.1298)	(0.1547)	(0.1299)	(0.1001)	(0.1312)	(0.1001)	(0.0926)	(0.1261)	(0.0926)	(0.1073)	(0.1373)	(0.1073)
Northern Ireland	-0.0332	-0.0333	-0.0332	-0.0332	-0.0333	-0.0332	-0.0332	-0.0333	-0.0332	-0.0332	-0.0333	-0.0332
	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)
Spring	0.1287***	0.1285***	0.1283***	0.1287***	0.1285***	0.1283***	0.1287***	0.1285***	0.1283***	0.1287***	0.1285***	0.1283***
	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)	(0.0256)
Summer	0.0528*	0.0529*	0.0525*	0.0528*	0.0529*	0.0525*	0.0528*	0.0529*	0.0525*	0.0528*	0.0529*	0.0525*
	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)	(0.0254)
Autumn	17.5737***		17.5494***	16.3373***		16.3108***	17.1013***		17.0350***	14.4403***		14.3826***
	(1.7184)		(1.7186)	(1.1115)		(1.1119)	(0.8706)		(0.8703)	(1.1498)		(1.1494)
wage_st_dev		-0.0046			-0.0046			-0.0046			-0.0046	
		(0.0042)			(0.0042)			(0.0042)			(0.0042)	
unemp_st_dev		0.1339*			0.1339*			0.1339*			0.1339*	
		(0.0558)			(0.0558)			(0.0558)			(0.0558)	
North West		0.6587***			0.4420***			0.5767***			0.4702***	
		(0.1238)			(0.0926)			(0.0839)			(0.1003)	
Residuals (Disab*Benefits)	17.5737***	17.5979***	17.5494***	16.3373***	16.4708***	16.3108***	17.1013***	17.0535***	17.0351***	14.4403***	14.5265***	14.3826***
	(1.7184)	(1.7188)	(1.7186)	(1.1115)	(1.1116)	(1.1119)	(0.8706)	(0.8702)	(0.8704)	(1.1498)	(1.1525)	(1.1494)
Residuals (Disab)	0.9103***	0.9064***	0.9144***	0.9042***	0.8948***	0.9081***	0.2123**	0.2171**	0.2193**	0.1142	0.1098	0.1287
	(0.2587)	(0.2584)	(0.2587)	(0.1164)	(0.1162)	(0.1164)	(0.0739)	(0.0738)	(0.0739)	(0.1035)	(0.1035)	(0.1036)
Female*Disab_benefit			-1.2981			-0.1512			-0.1484			0.0992

Variable	SAH > 1 vs. SAH ≤ 1			SAH > 2 vs. SAH ≤ 2			SAH > 3 vs. SAH ≤ 3			SAH > 4 vs. SAH ≤ 4		
	sah_iv1	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**	**sah_iv1**	**sah_iv2**	**sah_iv3**
			(1.4066)			(0.3816)			(0.0990)			(0.1277)
Female*Disab			0.8183			-0.0885			-0.0590			-0.1602*
			(1.1308)			(0.2537)			(0.0621)			(0.0777)
Female*Benefits			1.2677			0.0919			0.1661*			-0.1305
			(1.3980)			(0.3748)			(0.0839)			(0.0853)
Constant	5.6457***	5.4552***	6.0018***	2.7752***	2.5564***	2.7502***	-1.0523	-1.2229***	-1.0197	-3.0017***	-3.2065***	-3.0394***
	(1.1033)	(0.9218)	(1.0994)	(0.7599)	(0.4570)	(0.7701)	(0.6825)	(0.3228)	(0.6828)	(0.7152)	(0.3957)	(0.7161)
Observations	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616	74616
ll	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04	-8.40e+04
chi2	20290	20292	20600	20290	20292	20600	20290	20292	20600	20290	20292	20600

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.8 Disabled individuals claiming benefits affected by PIP cap

3.11.8.1 Life satisfaction, happiness, anxiety and worthiness measures of WB (2SLS) (complete results)

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
PIP	-0.1408+	-0.2552+	-0.1402+	-0.0762	-0.0181	-0.0765	0.2483+	-0.1290	-0.2484+	-0.1049	-0.2624*	-0.1038
	(0.0772)	(0.1309)	(0.0772)	(0.1003)	(0.1611)	(0.01003)	(0.1316)	(0.2053)	(0.1315)	(0.0801)	(0.1324)	(0.0800)
*Disab (IV)*Benefit*Over_cap*	0.0122	0.0426	0.0024	-0.1044	-0.0689	-0.0978	0.0104	-0.0468	0.0077	-0.0958	-0.0800	-0.1217+
	(0.0668)	(0.0670)	(0.0691)	(0.0797)	(0.0799)	(0.0802)	(0.1009)	(0.1011)	(0.1015)	(0.0652)	(0.0654)	(0.0657)
*PIP*Disab (IV)*Benefit*Over_cap*	-0.0133	-0.1389	-0.0131	0.0273	-0.0750	0.0271	0.0322	0.1580	0.0323	-0.0103	-0.0765	-0.0093
	(0.1366)	(0.1212)	(0.1366)	(0.1664)	(0.1469)	(0.1664)	(0.2132)	(0.1876)	(0.2132)	(0.1366)	(0.1197)	(0.1366)
Disab (IV) Benefits*	-0.3856***	-1.6854*	-0.3840***	-0.4766***	0.1447	-0.4579***	0.6153***	2.8813*	0.6076***	-0.1890**	-1.1784	-0.2628***
	(0.0696)	(0.8076)	(0.0696)	(0.0869)	(0.9724)	(0.0907)	(0.1130)	(1.2357)	(0.1178)	(0.0662)	(0.7943)	(0.0703)
*PIP*Disab (IV)*Benefit*	-0.5907***	-0.3956	-0.5908***	-0.5953**	-0.2970	-0.5947**	1.0107***	-0.3154	1.0104***	-0.4924***	-0.5699+	-0.4951***
	(0.1431)	(0.3091)	(0.1431)	(0.1859)	(0.3698)	(0.1859)	(0.2412)	(0.4582)	(0.2412)	(0.1477)	(0.3164)	(0.1476)
Disab (IV)	237.3104***	78.7918	237.2461***	201.5110**	279.6842+	201.7516**	-3.6e+02***	-34.8892	-3.6e+02***	144.8824*	14.6060	143.8357*
	(56.8660)	(126.6667)	(56.8637)	(69.0357)	(154.4661)	(69.0336)	(87.5770)	(198.7800)	(87.5832)	(56.8152)	(125.7656)	(56.8014)
*PIP*Disab (IV)*	9.9115	2.3292	9.9580+	7.3111	4.6437	7.2830	-11.5862	-30.8978+	-11.5745	11.1615+	-5.8179	11.2655>+
	(6.0484)	(12.1657)	(6.0472)	(7.1557)	(14.6177)	(7.1548)	(9.1141)	(18.2968)	(9.1134)	(5.8210)	(12.3427)	(5.8268)
Income_over_cap	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
*PIP*Over_cap*	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Disab (IV) Over_cap*	-2.4e+02***		-2.4e+02***	.		.	360.6014***	34.2814	.	.		.
	(56.7808)		(56.7786)	.		.	(87.4459)	(198.9835)	.	.		.
*Benefits*Over_cap*	-3.9802***	.	-3.9728***	.	.	.	5.9102***	.	.	.	.	.
	(0.9845)	.	(0.9845)	.	.	.	(1.5179)	.	.	.	.	.
*PIP*Disab (IV)*Over_cap*	-9.6063	-2.0436	-9.6530	-7.0224	-4.4329	-6.9945	10.9931	30.8315+	10.9816	-10.8773+	6.1717	-10.9803+
	(6.0296)	(12.2692)	(6.0283)	(7.1380)	(14.7431)	(7.1371)	(9.0911)	(18.4544)	(9.0904)	(5.8051)	(12.4488)	(5.8107)

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
*PIP*Benefit*Over_cap*	0.1434	0.0139	0.1429	0.1961	0.0009	0.1965	-0.4577+	0.4070	-0.4579+	0.1122	0.1499	0.1110
	(0.1612)	(0.2073)	(0.1612)	(0.2056)	(0.2517)	(0.2056)	(0.2634)	(0.3183)	(0.2634)	(0.1609)	(0.2096)	(0.1609)
Benefits	.	.		.	.	.	.	.	.	.	.	.
	.	.		.	.	.	.	.	.	.	.	.
*PIP*Benefits*	.	.		.	.	.	.	.	.	.	.	.
	.	.		.	.	.	.	.	.	.	.	.
Female	0.9557***	0.5967+	0.9330***	0.7277**	0.9950*	0.7440**	-0.9602**	-0.1704	-0.9669**	0.8148***	0.4996	0.7501***
	(0.1927)	(0.3626)	(0.1953)	(0.2343)	(0.4433)	(0.2347)	(0.2963)	(0.5704)	(0.2974)	(0.1927)	(0.3607)	(0.1927)
*Female*Disab (IV)*Benefits*			0.0335			-0.0390			0.0161			0.1541***
			(0.0562)			(0.0500)			(0.0630)			(0.0421)
First regions	-0.1307+	-0.0374	-0.1305+	-0.0147	-0.0511	-0.0150	0.0858	0.1001	0.0859	-0.0609	0.0182	-0.0596
	(0.0718)	(0.0790)	(0.0718)	(0.0862)	(0.0961)	(0.0862)	(0.1075)	(0.1198)	(0.1075)	(0.0709)	(0.0780)	(0.0708)
Married	0.5771***	0.6147***	0.5768***	0.3973***	0.3679***	0.3976***	0.0280	-0.0856	0.0279	0.4054***	0.4411***	0.4042***
	(0.0369)	(0.0518)	(0.0370)	(0.0447)	(0.0635)	(0.0447)	(0.0565)	(0.0813)	(0.0565)	(0.0363)	(0.0513)	(0.0363)
Age	-0.1596***	-0.1320***	-0.1595***	-0.1314***	-0.1541***	-0.1314***	0.1921***	0.1316**	0.1921***	-0.0874***	-0.0615*	-0.0876***
	(0.0165)	(0.0292)	(0.0165)	(0.0200)	(0.0357)	(0.0200)	(0.0254)	(0.0460)	(0.0254)	(0.0165)	(0.0290)	(0.0165)
Age squared	0.0019***	0.0015***	0.0019***	0.0016***	0.0019***	0.0016***	-0.0023***	-0.0015**	-0.0023***	0.0011***	0.0008*	0.0011***
	(0.0002)	(0.0004)	(0.0002)	(0.0002)	(0.0005)	(0.0002)	(0.0003)	(0.0006)	(0.0003)	(0.0002)	(0.0004)	(0.0002)
Higher educ	0.1222**	0.0604	0.1222**	0.1781***	0.1988**	0.1786***	-0.2742***	-0.1526	-0.2743***	0.0941*	0.0355	0.0923*
	(0.0404)	(0.0607)	(0.0404)	(0.0488)	(0.0737)	(0.0488)	(0.0631)	(0.0952)	(0.0631)	(0.0397)	(0.0601)	(0.0397)
GCE, A-level or equivalent	-0.0210	-0.0273	-0.0209	0.0247	0.0304	0.0248	-0.1614***	-0.1275**	-0.1615***	-0.0214	-0.0396	-0.0221
	(0.0256)	(0.0261)	(0.0256)	(0.0313)	(0.0319)	(0.0313)	(0.0405)	(0.0415)	(0.0405)	(0.0256)	(0.0262)	(0.0256)
GCSE grades A-C or equivalent*	0.0100	-0.0230	0.0099	0.0906*	0.1341*	0.0909*	-0.2668***	-0.1837*	-0.2669***	-0.0066	-0.0412	-0.0077
	(0.0341)	(0.0512)	(0.0341)	(0.0408)	(0.0619)	(0.0408)	(0.0518)	(0.0793)	(0.0518)	(0.0340)	(0.0507)	(0.0340)
Other qualifications	0.1630***	0.0781	0.1631***	0.1957***	0.2405**	0.1957***	-0.3720***	-0.2267*	-0.3721***	0.1131*	0.0334	0.1129*
	(0.0491)	(0.0747)	(0.0491)	(0.0575)	(0.0894)	(0.0575)	(0.0720)	(0.1141)	(0.0721)	(0.0481)	(0.0740)	(0.0480)
No qualification	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Educ_squared	0.0140***	0.0087	0.0140***	0.0110**	0.0148*	0.0111**	-0.0231***	-0.0104	-0.0231***	0.0012	-0.0036	0.0011

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.0033)	(0.0057)	(0.0033)	(0.0040)	(0.0070)	(0.0040)	(0.0051)	(0.0091)	(0.0051)	(0.0033)	(0.0057)	(0.0033)
Age_left_FT_educ	0.1034***	0.0493	0.1034***	0.1018**	0.1383*	0.1020**	-0.1934***	-0.0755	-0.1935***	0.0739*	0.0248	0.0732*
	(0.0289)	(0.0534)	(0.0289)	(0.0350)	(0.0654)	(0.0350)	(0.0441)	(0.0838)	(0.0441)	(0.0289)	(0.0531)	(0.0289)
Age_left_educ_squared	-0.0027***	-0.0012	-0.0027***	-0.0026**	-0.0035*	-0.0026**	0.0053***	0.0021	0.0053***	-0.0020**	-0.0007	-0.0020**
	(0.0008)	(0.0014)	(0.0008)	(0.0009)	(0.0018)	(0.0009)	(0.0012)	(0.0023)	(0.0012)	(0.0008)	(0.0014)	(0.0008)
House or bungalow - semi detached	0.0573	-0.0642	0.0569	0.1213	0.2165	0.1221	-0.2749*	0.0091	-0.2752*	0.0549	-0.0514	0.0516
	(0.0743)	(0.1310)	(0.0743)	(0.0897)	(0.1602)	(0.0897)	(0.1146)	(0.2064)	(0.1146)	(0.0739)	(0.1302)	(0.0738)
Terraced	0.0024	-0.0545	0.0021	0.0849	0.1788	0.0851	-0.1182	-0.0091	-0.1183	0.0042	-0.0503	0.0033
	(0.1497)	(0.1774)	(0.1497)	(0.1873)	(0.2198)	(0.1873)	(0.2318)	(0.2785)	(0.2318)	(0.1414)	(0.1703)	(0.1416)
Flatmaisonette - purpose built	0.4104*	0.1415	0.4100*	0.3652+	0.5918	0.3660+	-0.8250**	-0.1709	-0.8253**	0.2908+	0.0410	0.2876
	(0.1757)	(0.3085)	(0.1757)	(0.2127)	(0.3772)	(0.2127)	(0.2698)	(0.4860)	(0.2698)	(0.1756)	(0.3072)	(0.1756)
Flatmaiste - part hseconverted hse	0.1271	0.0844	0.1267	0.0339	0.1212	0.0344	-0.2676	-0.0832	-0.2678	0.1421	0.0831	0.1400
	(0.1298)	(0.1478)	(0.1298)	(0.1470)	(0.1743)	(0.1470)	(0.1769)	(0.2139)	(0.1769)	(0.1306)	(0.1477)	(0.1304)
Gypsy, Traveller/Irish Traveller	0.3155	0.0340	0.3156	0.0210	0.2234	0.0224	0.1095	0.2442	0.1089	-0.5277	-0.6955	-0.5282
	(0.6402)	(0.6282)	(0.6407)	(0.6739)	(0.6544)	(0.6732)	(0.7096)	(0.7028)	(0.7097)	(0.7644)	(0.7527)	(0.7654)
Mixed / Multiple ethnic groups	0.1943	-0.0474	0.1941	0.3204*	0.3144	0.3211*	-0.3111	0.1674	-0.3114	0.2924*	0.1070	0.2895*
	(0.1284)	(0.1849)	(0.1283)	(0.1473)	(0.2210)	(0.1474)	(0.2027)	(0.2922)	(0.2027)	(0.1300)	(0.1855)	(0.1298)
Indian	-0.0444	0.0083	-0.0447	0.1427	-0.0046	0.1422	0.1984	0.0569	0.1986	-0.0912	-0.0029	-0.0896
	(0.1125)	(0.1375)	(0.1125)	(0.1338)	(0.1591)	(0.1338)	(0.1777)	(0.2088)	(0.1777)	(0.1099)	(0.1300)	(0.1099)
Pakistani	0.0752	0.0565	0.0755	0.0939	0.0642	0.0927	-0.0996	-0.0155	-0.0992	0.0963	0.0877	0.1003
	(0.1253)	(0.1224)	(0.1253)	(0.1521)	(0.1473)	(0.1522)	(0.1829)	(0.1750)	(0.1829)	(0.1250)	(0.1219)	(0.1250)
Bangladeshi	-0.1984	-0.0691	-0.1980	0.1670	0.1185	0.1664	-0.2600	-0.4140	-0.2598	-0.0472	0.0727	-0.0454
	(0.1868)	(0.1917)	(0.1868)	(0.2291)	(0.2340)	(0.2291)	(0.2496)	(0.2639)	(0.2496)	(0.1650)	(0.1732)	(0.1647)
Chinese	-0.3199+	0.0244	-0.3207+	0.0735	-0.1989	0.0746	0.4499	-0.0672	0.4495	-0.5618**	-0.2789	-0.5657**
	(0.1810)	(0.2588)	(0.1810)	(0.2226)	(0.3162)	(0.2224)	(0.3382)	(0.4447)	(0.3383)	(0.2152)	(0.2711)	(0.2162)
Any other Asian background	0.2866*	0.2115+	0.2868*	0.2080	0.2570	0.2069	-0.6547**	-0.4617*	-0.6543**	0.0950	0.0392	0.0986

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.1156)	(0.1243)	(0.1155)	(0.1765)	(0.1779)	(0.1766)	(0.2026)	(0.2091)	(0.2026)	(0.1237)	(0.1305)	(0.1238)
Black/ African/Caribbean/Black British	-0.1976*	-0.2219*	-0.1977*	0.1490	0.2083*	0.1498	-0.5992***	-0.4601***	-0.5995***	0.0640	0.0308	0.0608
	(0.0781)	(0.0869)	(0.0781)	(0.0932)	(0.1043)	(0.0931)	(0.1149)	(0.1306)	(0.1149)	(0.0767)	(0.0854)	(0.0767)
Arab	0.3119	0.2375	0.3134	0.1703	0.2602	0.1679	-0.1048	-0.0219	-0.1038	0.0149	-0.0231	0.0237
	(0.2072)	(0.2098)	(0.2073)	(0.2672)	(0.2666)	(0.2671)	(0.3135)	(0.3146)	(0.3135)	(0.2151)	(0.2153)	(0.2150)
Other ethnic group	-0.4619***	-0.3361**	-0.4616***	-0.4299**	-0.4492**	-0.4310**	0.2142	0.1149	0.2146	-0.4307***	-0.3437**	-0.4265***
	(0.1112)	(0.1136)	(0.1112)	(0.1390)	(0.1419)	(0.1390)	(0.1700)	(0.1739)	(0.1700)	(0.1183)	(0.1196)	(0.1182)
Christian (all denominations)	0.1731***	0.1696***	0.1730***	0.2342***	0.2261***	0.2343***	0.0225	0.0334	0.0224	0.2295***	0.2357***	0.2292***
	(0.0211)	(0.0202)	(0.0211)	(0.0254)	(0.0243)	(0.0254)	(0.0320)	(0.0307)	(0.0320)	(0.0209)	(0.0199)	(0.0209)
Buddhist	-0.2991+	-0.2076	-0.2992+	-0.0693	-0.1083	-0.0695	1.0208***	0.7689**	1.0209***	-0.0615	0.0066	-0.0612
	(0.1586)	(0.1698)	(0.1586)	(0.1716)	(0.1886)	(0.1717)	(0.2086)	(0.2357)	(0.2086)	(0.1700)	(0.1789)	(0.1703)
Hindu	0.0338	0.0897	0.0334	0.1236	0.1595	0.1246	0.3502+	0.2217	0.3498+	0.1938	0.2212+	0.1904
	(0.1280)	(0.1262)	(0.1280)	(0.1531)	(0.1471)	(0.1531)	(0.1983)	(0.1899)	(0.1983)	(0.1199)	(0.1143)	(0.1198)
Jewish	-0.1556	-0.1279	-0.1561	-0.1563	-0.1729	-0.1560	0.5415*	0.5694**	0.5414*	-0.0303	-0.0244	-0.0319
	(0.1329)	(0.1282)	(0.1328)	(0.1720)	(0.1629)	(0.1720)	(0.2104)	(0.2007)	(0.2104)	(0.1275)	(0.1226)	(0.1278)
Muslim	0.9044***	0.5699+	0.9039***	0.6278**	0.8366*	0.6290**	-0.8374**	-0.1925	-0.8379**	0.5735**	0.2985	0.5688**
	(0.1749)	(0.3120)	(0.1748)	(0.2144)	(0.3831)	(0.2144)	(0.2692)	(0.4895)	(0.2692)	(0.1772)	(0.3122)	(0.1772)
Sikh	-0.0095	-0.0509	-0.0092	-0.0444	0.1456	-0.0429	0.1064	0.2024	0.1058	0.1972	0.1454	0.1912
	(0.1817)	(0.2006)	(0.1817)	(0.2066)	(0.2303)	(0.2066)	(0.2604)	(0.2937)	(0.2604)	(0.1718)	(0.1906)	(0.1717)
Any other religion	-0.1843*	-0.1338+	-0.1846*	0.1204	0.0598	0.1205	0.3970***	0.2536*	0.3969***	0.1065	0.1759*	0.1060
	(0.0723)	(0.0805)	(0.0723)	(0.0783)	(0.0915)	(0.0783)	(0.1011)	(0.1186)	(0.1011)	(0.0727)	(0.0803)	(0.0725)
Employed	-1.1962**	-0.4926	-1.1958**	-1.2110**	-1.6885*	-1.2123**	2.2010***	0.6465	2.2015***	-0.7458*	-0.1272	-0.7399*
	(0.3725)	(0.6910)	(0.3725)	(0.4522)	(0.8443)	(0.4521)	(0.5733)	(1.0874)	(0.5734)	(0.3723)	(0.6868)	(0.3722)
Self-employed	-0.6205**	-0.2380	-0.6206**	-0.6339*	-0.9080+	-0.6336*	1.3177***	0.4549	1.3175***	-0.2386	0.1079	-0.2395
	(0.2300)	(0.4002)	(0.2300)	(0.2793)	(0.4896)	(0.2793)	(0.3540)	(0.6306)	(0.3540)	(0.2301)	(0.3985)	(0.2301)
Gov. employed training	0.1900	-0.0771	0.1903	0.5593*	0.5829+	0.5564*	-0.6211*	-0.1672	-0.6200*	-0.1231	-0.3005	-0.1121
	(0.2190)	(0.2602)	(0.2191)	(0.2529)	(0.3073)	(0.2529)	(0.2945)	(0.3726)	(0.2946)	(0.2335)	(0.2649)	(0.2339)
Student	-0.8800**	-0.3726	-0.8795**	-0.9063*	-1.2768+	-0.9075*	2.1229***	0.9516	2.1234***	-0.4668	0.0131	-0.4616

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
	(0.3135)	(0.5483)	(0.3135)	(0.3815)	(0.6697)	(0.3815)	(0.4853)	(0.8683)	(0.4853)	(0.3153)	(0.5465)	(0.3153)
Retired	0.2620**	0.4633*	0.2621**	0.1552	0.0365	0.1575	0.0311	-0.3811	0.0301	-0.0349	0.1350	-0.0437
	(0.0968)	(0.1829)	(0.0968)	(0.1174)	(0.2226)	(0.1175)	(0.1494)	(0.2863)	(0.1494)	(0.0966)	(0.1812)	(0.0967)
Disabled, not working	0.0488	-0.0588	0.0498	-0.0994	-0.0288	-0.1012	-0.2553	0.0503	-0.2545	-0.4671***	-0.5785***	-0.4603***
	(0.1352)	(0.1737)	(0.1352)	(0.1630)	(0.2127)	(0.1630)	(0.2060)	(0.2731)	(0.2060)	(0.1349)	(0.1733)	(0.1350)
Length of time at address: 12 mths but less than 2 years	0.2835***	0.1430	0.2836***	0.2205*	0.3204+	0.2208*	-0.5177***	-0.2238	-0.5179***	0.1669*	0.0552	0.1654*
	(0.0823)	(0.1389)	(0.0823)	(0.0996)	(0.1694)	(0.0995)	(0.1257)	(0.2162)	(0.1257)	(0.0814)	(0.1371)	(0.0814)
2 years but less than 3 years	0.3085**	0.1476	0.3084**	0.2932*	0.4143*	0.2936*	-0.6701***	-0.2923	-0.6702***	0.1819+	0.0428	0.1806+
	(0.0982)	(0.1726)	(0.0982)	(0.1196)	(0.2095)	(0.1196)	(0.1509)	(0.2684)	(0.1509)	(0.0973)	(0.1705)	(0.0973)
3 years but less than 5 years	0.4662***	0.2455	0.4660***	0.3415*	0.5041+	0.3420*	-0.8366***	-0.3639	-0.8368***	0.2968*	0.1020	0.2945*
	(0.1215)	(0.2177)	(0.1215)	(0.1462)	(0.2645)	(0.1462)	(0.1843)	(0.3393)	(0.1843)	(0.1206)	(0.2158)	(0.1205)
5 years but less than 10 years	0.4280***	0.2143	0.4278***	0.3609*	0.5358*	0.3616*	-0.8254***	-0.3458	-0.8257***	0.2837*	0.0921	0.2807*
	(0.1214)	(0.2203)	(0.1214)	(0.1471)	(0.2683)	(0.1471)	(0.1860)	(0.3445)	(0.1860)	(0.1209)	(0.2183)	(0.1209)
10 years or longer	0.1903*	0.0684	0.1902*	0.1322	0.2314	0.1327	-0.4581***	-0.1974	-0.4583***	0.1336+	0.0301	0.1316+
	(0.0757)	(0.1289)	(0.0757)	(0.0913)	(0.1563)	(0.0913)	(0.1147)	(0.1998)	(0.1147)	(0.0754)	(0.1279)	(0.0754)
Ex-smoker	0.4005***	0.3669***	0.4004***	0.3598***	0.3438***	0.3602***	-0.3086***	-0.2337***	-0.3088***	0.3033***	0.2689***	0.3015***
	(0.0260)	(0.0291)	(0.0260)	(0.0310)	(0.0349)	(0.0310)	(0.0387)	(0.0439)	(0.0388)	(0.0259)	(0.0288)	(0.0259)
Never smoked	0.4023***	0.4258***	0.4022***	0.3801***	0.3535***	0.3802***	-0.2374***	-0.2652***	-0.2374***	0.3148***	0.3243***	0.3144***
	(0.0288)	(0.0332)	(0.0288)	(0.0344)	(0.0402)	(0.0344)	(0.0425)	(0.0504)	(0.0425)	(0.0287)	(0.0332)	(0.0287)
Diff. reg wage	0.0220**		0.0220**	0.0160+		0.0160+	-0.0329**		-0.0329**	0.0111		0.0111
	(0.0079)		(0.0079)	(0.0094)		(0.0094)	(0.0119)		(0.0119)	(0.0077)		(0.0077)
Log regional unem	-0.2710		-0.2699	0.1293		0.1277	0.1813		0.1819	-0.1870		-0.1813
	(0.2835)		(0.2835)	(0.3439)		(0.3439)	(0.4319)		(0.4319)	(0.2803)		(0.2803)
Face-to-face interview	-0.2162***	-0.1679***	-0.2161***	-0.1639***	-0.1815***	-0.1641***	0.1183**	0.0176	0.1184**	-0.1834***	-0.1383***	-0.1825***
	(0.0255)	(0.0401)	(0.0255)	(0.0310)	(0.0488)	(0.0310)	(0.0396)	(0.0628)	(0.0396)	(0.0248)	(0.0395)	(0.0248)
North West	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Yorkshire and The Humber	0.0009	0.0140	0.0012	0.0708	0.0749	0.0705	-0.0969	0.0150	-0.0968	0.0427	0.0474	0.0439
	(0.0611)	(0.0813)	(0.0611)	(0.0731)	(0.0990)	(0.0731)	(0.0920)	(0.1261)	(0.0920)	(0.0603)	(0.0802)	(0.0603)
East Midlands	-0.1545	-0.0246	-0.1541	0.0218	-0.0141	0.0215	0.1392	0.1134	0.1394	-0.0573	0.0350	-0.0562
	(0.0949)	(0.0985)	(0.0948)	(0.1136)	(0.1194)	(0.1136)	(0.1422)	(0.1500)	(0.1422)	(0.0925)	(0.0969)	(0.0925)
West Midlands	-0.1110+	-0.0761	-0.1109+	-0.0079	0.0125	-0.0081	-0.2185*	-0.1391	-0.2184*	-0.1230+	-0.1075	-0.1220+
	(0.0669)	(0.0875)	(0.0669)	(0.0806)	(0.1074)	(0.0806)	(0.1010)	(0.1361)	(0.1010)	(0.0654)	(0.0865)	(0.0654)
East of England	-0.3383*	-0.1804*	-0.3377*	-0.0234	-0.0713	-0.0243	0.2989	0.1371	0.2992	-0.1941	-0.0724	-0.1908
	(0.1401)	(0.0829)	(0.1400)	(0.1669)	(0.0982)	(0.1669)	(0.2095)	(0.1248)	(0.2095)	(0.1370)	(0.0804)	(0.1370)
London	-0.3174***	0.0253	-0.3171***	-0.1808+	-0.5378+	-0.1812+	0.6078***	0.2924	0.6079***	-0.2142**	0.1070	-0.2128**
	(0.0802)	(0.2645)	(0.0802)	(0.0957)	(0.3227)	(0.0957)	(0.1209)	(0.4132)	(0.1209)	(0.0792)	(0.2690)	(0.0792)
South East	-0.2809+	-0.0781	-0.2803+	-0.0409	-0.1856*	-0.0416	0.2833	0.1199	0.2835	-0.1686	-0.0097	-0.1661
	(0.1566)	(0.0695)	(0.1566)	(0.1884)	(0.0838)	(0.1884)	(0.2356)	(0.1060)	(0.2356)	(0.1536)	(0.0689)	(0.1536)
South West	-0.1947	-0.0713	-0.1940	0.0669	0.0533	0.0660	0.0577	0.0153	0.0580	-0.1006	-0.0361	-0.0973
	(0.1596)	(0.0714)	(0.1595)	(0.1912)	(0.0857)	(0.1912)	(0.2397)	(0.1100)	(0.2397)	(0.1565)	(0.0716)	(0.1565)
Wales	0.0167	0.1454	0.0168	0.1349	0.1106	0.1347	-0.0734	-0.0147	-0.0734	0.0731	0.1707+	0.0737
	(0.0783)	(0.0962)	(0.0783)	(0.0945)	(0.1173)	(0.0945)	(0.1175)	(0.1466)	(0.1175)	(0.0775)	(0.0951)	(0.0775)
Scotland	-0.1282	-0.0053	-0.1278	-0.0264	0.0061	-0.0269	0.1494	0.0850	0.1496	-0.1223	-0.0420	-0.1202
	(0.0984)	(0.1185)	(0.0983)	(0.1173)	(0.1438)	(0.1173)	(0.1470)	(0.1821)	(0.1470)	(0.0960)	(0.1171)	(0.0959)
Northern Ireland	.	.	.	.	.	.	.	.	.	.	.	.
	.	.	.	.	.	.	.	.	.	.	.	.
Spring	-0.0670*	0.1042	-0.0671*	0.0107	-0.0078	0.0108	0.1530**	-0.1428	0.1530**	-0.0015	0.1212	-0.0017
	(0.0313)	(0.0841)	(0.0313)	(0.0373)	(0.1023)	(0.0373)	(0.0470)	(0.1307)	(0.0470)	(0.0304)	(0.0831)	(0.0304)
Summer	-0.0115	0.2033+	-0.0116	0.0719*	0.0479	0.0720*	0.0983*	-0.2689	0.0982*	0.0347	0.1907+	0.0340
	(0.0288)	(0.1075)	(0.0288)	(0.0341)	(0.1305)	(0.0341)	(0.0431)	(0.1661)	(0.0431)	(0.0283)	(0.1059)	(0.0283)
Autumn	-0.0292	0.1781+	-0.0293	-0.0313	-0.0513	-0.0312	0.1813***	-0.1720	0.1813***	0.0428	0.1922+	0.0426
	(0.0282)	(0.1027)	(0.0282)	(0.0337)	(0.1246)	(0.0337)	(0.0423)	(0.1588)	(0.0423)	(0.0275)	(0.1010)	(0.0275)
wage_st_dev		-0.0046			0.0058			0.0030			-0.0046	
		(0.0045)			(0.0055)			(0.0070)			(0.0046)	
unemp_st_dev		0.0610			-0.0018			0.0446			0.0550	
		(0.0600)			(0.0731)			(0.0925)			(0.0593)	

Variable	ls_over_cap1	ls_over_cap2	ls_over_cap3	happy_over_cap1	happy_over_cap2	happy_over_cap3	anxious_iv1	anxious_iv2	anxious_iv3	worth_iv1	worth_iv2	worth_iv3
Constant	11.2245***	9.5667***	11.2299***	9.1525***	9.9962***	9.1500***	-1.3592	1.0734	-1.3581	9.4461***	8.1438***	9.4564***
	(0.7503)	(0.8252)	(0.7505)	(0.8953)	(0.9998)	(0.8954)	(1.1306)	(1.2892)	(1.1307)	(0.7342)	(0.8176)	(0.7342)
Observations	69250	76250	69250	69232	76233	69232	69169	76170	69169	69036	76026	69036
R-squared	0.18	0.18	0.18	0.098	0.097	0.098	0.059	0.057	0.059	0.14	0.14	0.14
ll	-1.44e+05	-1.59e+05	-1.44e+05	-1.57e+05	-1.73e+05	-1.57e+05	-1.73e+05	-1.91e+05	-1.73e+05	-1.42e+05	-1.57e+05	-1.42e+05

Income_over_cap, *PIP*over_cap*, *Benefits* and *PIP*Benefits* dropped due to multicollinearity.
Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

3.11.8.2 Self-assessed health (Ologit[17]) (complete results)

Variable	sah_iv1	sah_iv2	sah_iv3
PIP	-0.2572**	.	.
	(0.0876)	.	.
*Disab (IV)*Benefit*Over_cap*	-0.4977***	-0.4847***	-0.4472***
	(0.0665)	(0.0665)	(0.0688)
*PIP*Disab (IV)*Benefit*Over_cap*	0.0556	0.0506	0.0555
	(0.1354)	(0.1355)	(0.1354)
Disab (IV) Benefits*	-1.7520***	-1.7358***	-1.7027***
	(0.0752)	(0.0752)	(0.1066)
*PIP*Disab (IV)*Benefit*	-0.5266***	-0.5267***	-0.5247***
	(0.1551)	(0.1553)	(0.1552)
Disab (IV)	818.1006***	1.0e+03***	816.7027***
	(57.9110)	(64.1367)	(57.9299)
*PIP*Disab (IV)*	-0.5545	-0.3161	-0.8172
	(5.9850)	(5.9698)	(5.9848)
Income_over_cap	.	.	.
	.	.	.
*PIP*Over_cap*	.	.	.
	.	.	.
Disab (IV) Over_cap*	-8.2e+02***		.
	(57.8244)		.
*Benefits*Over_cap*	-12.8122***	.	.
	(1.0026)	.	.
*PIP*Disab (IV)*Over_cap*	0.6472	0.4091	0.9107
	(5.9689)	(5.9540)	(5.9688)
*PIP*Benefit*Over_cap*	0.2757	0.2706	0.2763
	(0.1698)	(0.1698)	(0.1698)
Benefits	.		
	.		
*PIP*Benefits*	.	.	.
	.	.	.
First regions	0.2084**	0.4013***	0.2064**
	(0.0689)	(0.0799)	(0.0689)
Married	-0.4560***	-0.5553***	-0.4539***
	(0.0373)	(0.0402)	(0.0373)
Female	2.7485***	3.3649***	.
	(0.1966)	(0.2176)	.
*Female*Disab (IV)*Benefits*			-0.1074
			(0.1275)
Female*Disab (IV)			-0.1226
			(0.0900)
Female*benefits			0.1112
			(0.0945)
Age	-0.2800***	-0.3292***	-0.2801***

[17] This robustness check has been estimated with ologit instead of gologit, as the latter specification does not converge.

Variable	sah_iv1	sah_iv2	sah_iv3
	(0.0167)	(0.0182)	(0.0167)
Age squared	0.0033***	0.0039***	0.0033***
	(0.0002)	(0.0002)	(0.0002)
Higher educ	0.4415***	0.5573***	0.4404***
	(0.0495)	(0.0524)	(0.0495)
GCE, A-level or equivalent	0.2025***	0.2976***	0.2014***
	(0.0430)	(0.0451)	(0.0430)
GCSE grades A-C or equivalent*	0.7628***	0.9834***	0.7615***
	(0.0765)	(0.0833)	(0.0765)
Other qualifications	1.3314***	1.6779***	1.3286***
	(0.1151)	(0.1263)	(0.1151)
No qualification	1.2355***	1.5836***	1.2328***
	(0.1163)	(0.1274)	(0.1164)
Educ_squared	.	.	.
	.	.	.
Age_left_FT_educ	0.3996***	0.4886***	0.3987***
	(0.0292)	(0.0321)	(0.0292)
Age_left_educ_squared	-0.0104***	-0.0127***	-0.0104***
	(0.0008)	(0.0009)	(0.0008)
House or bungalow - semi detached	0.9187***	1.1461***	0.9183***
	(0.0753)	(0.0828)	(0.0753)
Terraced	0.9267***	1.1937***	0.9267***
	(0.1579)	(0.1629)	(0.1579)
Flatmaisonette - purpose built	2.2608***	2.8170***	2.2586***
	(0.1785)	(0.1975)	(0.1786)
Flatmaiste - part hseconverted hse	0.3395**	0.5214***	0.3407**
	(0.1176)	(0.1209)	(0.1176)
Gypsy, Traveller/Irish Traveller	1.6602***	1.8931***	1.6570***
	(0.2922)	(0.2859)	(0.2896)
Mixed / Multiple ethnic groups	0.9588***	1.1709***	0.9593***
	(0.1199)	(0.1241)	(0.1198)
Indian	-0.8261***	-0.9572***	-0.8221***
	(0.1123)	(0.1144)	(0.1122)
Pakistani	-0.2113+	-0.2027+	-0.2113+
	(0.1152)	(0.1154)	(0.1152)
Bangladeshi	-0.2939+	-0.3441*	-0.2941+
	(0.1640)	(0.1641)	(0.1639)
Chinese	-1.6338***	-1.9746***	-1.6255***
	(0.1987)	(0.2053)	(0.1989)
Any other Asian background	0.0978	0.2022	0.0971
	(0.1266)	(0.1278)	(0.1266)
Black/ African/Caribbean/Black British	0.3475***	0.4645***	0.3473***

Variable	sah_iv1	sah_iv2	sah_iv3
	(0.0709)	(0.0730)	(0.0710)
Arab	0.5771**	0.7148***	0.5722**
	(0.1852)	(0.1865)	(0.1855)
Other ethnic group	-0.6302***	-0.7330***	-0.6292***
	(0.0997)	(0.1009)	(0.0996)
Christian (all denominations)	0.0725***	0.0826***	0.0726***
	(0.0212)	(0.0213)	(0.0212)
Buddhist	-0.4532*	-0.5848**	-0.4505*
	(0.1841)	(0.1852)	(0.1838)
Hindu	0.1984	0.2367+	0.1987
	(0.1259)	(0.1262)	(0.1259)
Jewish	-0.3484**	-0.3232*	-0.3464**
	(0.1258)	(0.1258)	(0.1255)
Muslim	1.8809***	2.3583***	1.8777***
	(0.1741)	(0.1886)	(0.1742)
Sikh	0.8819***	1.0895***	0.8753***
	(0.1628)	(0.1663)	(0.1629)
Any other religion	-0.4953***	-0.5557***	-0.4928***
	(0.0656)	(0.0660)	(0.0656)
Employed	-5.2419***	-6.4528***	-5.2333***
	(0.3795)	(0.4213)	(0.3797)
Self-employed	-3.0852***	-3.8205***	-3.0782***
	(0.2348)	(0.2598)	(0.2349)
Gov. employed training	1.5925***	1.9437***	1.5935***
	(0.2142)	(0.2195)	(0.2138)
Student	-4.1227***	-5.0783***	-4.1171***
	(0.3263)	(0.3560)	(0.3265)
Retired	-1.2197***	-1.5091***	-1.2222***
	(0.0987)	(0.1080)	(0.0989)
Disabled, not working	0.3242*	0.7389***	0.3172*
	(0.1363)	(0.1499)	(0.1364)
Length of time at address: 12 mths but less than 2 years	0.8787***	1.0910***	0.8763***
	(0.0825)	(0.0886)	(0.0825)
2 years but less than 3 years	1.1580***	1.4337***	1.1554***
	(0.0998)	(0.1081)	(0.0998)
3 years but less than 5 years	1.5529***	1.9147***	1.5500***
	(0.1213)	(0.1330)	(0.1213)
5 years but less than 10 years	1.5732***	1.9427***	1.5700***
	(0.1228)	(0.1348)	(0.1229)
10 years or longer	0.8195***	1.0270***	0.8180***
	(0.0755)	(0.0817)	(0.0755)
Ex-smoker	0.3388***	0.3552***	0.3391***
	(0.0247)	(0.0249)	(0.0247)
Never smoked	0.1714***	0.1342***	0.1720***
	(0.0274)	(0.0279)	(0.0274)

Variable	sah_iv1	sah_iv2	sah_iv3
Diff. reg wage	0.0258***		0.0257***
	(0.0076)		(0.0076)
Log regional unem	0.9847***		0.9765***
	(0.2812)		(0.2813)
Face-to-face interview	-0.5025***	-0.5485***	-0.5024***
	(0.0259)	(0.0267)	(0.0259)
North West	.	.	.
	.	.	.
Yorkshire and The Humber	0.4741***	0.6835***	0.4717***
	(0.0590)	(0.0704)	(0.0591)
East Midlands	0.1317	0.3745***	0.1285
	(0.0913)	(0.0995)	(0.0913)
West Midlands	0.3485***	0.5912***	0.3465***
	(0.0643)	(0.0784)	(0.0643)
East of England	0.0713	-0.1223	0.0681
	(0.1363)	(0.0831)	(0.1363)
London	-0.5847***	-1.2181***	-0.5851***
	(0.0779)	(0.2236)	(0.0779)
South East	0.3067*	-0.2402***	0.3025*
	(0.1534)	(0.0580)	(0.1534)
South West	0.6826***	0.4156***	0.6774***
	(0.1549)	(0.0746)	(0.1550)
Wales	0.5402***	0.7430***	0.5387***
	(0.0759)	(0.0926)	(0.0760)
Scotland	-0.0007	0.3453**	-0.0023
	(0.0949)	(0.1250)	(0.0950)
Northern Ireland	.	.	.
	.	.	.
Spring	-0.2565***	-0.3015***	-0.2557***
	(0.0308)	(0.0315)	(0.0308)
Summer	-0.1222***	-0.1588***	-0.1218***
	(0.0285)	(0.0291)	(0.0285)
Autumn	-0.1375***	-0.1672***	-0.1370***
	(0.0278)	(0.0281)	(0.0278)
wage_st_dev		0.0119**	
		(0.0044)	
unemp_st_dev		0.2791***	
		(0.0589)	
cut1			
Constant	-11.0382***	-13.8111***	-11.0307***
	(0.7433)	(0.4626)	(0.7443)
cut2			
Constant	-8.9586***	-11.7317***	-8.9515***
	(0.7428)	(0.4619)	(0.7438)
cut3			
Constant	-6.5818***	-9.3518***	-6.5747***
	(0.7422)	(0.4606)	(0.7432)
cut4			

Variable	sah_iv1	sah_iv2	sah_iv3
Constant	-4.0722***	-6.8415***	-4.0643***
	(0.7421)	(0.4600)	(0.7431)
Observations	69643	69643	69643
ll	-1.24e+07	-1.24e+07	-1.24e+07
chi2	19250	19371	19568

Robust standard errors in parentheses. + p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Conclusions

The last recession provides an interesting opportunity to reassess what determines individual wellbeing and how people are affected by external factors. Wellbeing has been studied extensively over the last years and it is agreed to be an important indicator to account for at macro level. It has been shown that, beyond personal circumstances and characteristics, individual wellbeing is affected by macro indicators such as GDP, unemployment or inflation rate. In this thesis, we analysed in more details the impact of the last recession on individual wellbeing in 28 countries, controlling for both individual and nation-level variability. We observed that reported wellbeing increased after the initial decline in the first few years after the recession onset and interpreted this result as adaption.

Continuing on this topic, we analysed the adaptation to another external shock, an amputation, and compared quality of life assessments made by a treatment group, amputees, their assessment for peers, and that of a control group on behalf of patients. We obtained that the main determinant of the gap between these evaluations was *duration since event*, commonly interpreted in literature as adaptation. Moreover, we also obtained that patients acknowledge adaptation. Lastly, we analysed the impact of a government reform meant, amongst other things, to cut government spending as a consequence of the last recession, on disabled individuals, of which we know from the second chapter that they adapt to external shocks, and who were directly affected by this reform.

The thesis consists of three autonomous chapters analysing individual wellbeing and adaptation in different contexts. Our aim was to see how people are affected by changes in their life, either by a macro event such as a recession, budgetary constraints imposed through government reform, or a health shock such as an acquired amputation.

In the first chapter, we look at how people were affected by the last economic crisis. We implemented a partial proportional odds estimation on a dataset comprised of self-reported life satisfaction and personal characteristics of approximatively 1,000 individuals from 28 European countries, from 2004 to 2013. To these data, we added macro controls and sovereign ratings, to observe the recession effects on individual life satisfaction. Our results indicate that individuals were affected in terms of their life satisfaction, beyond the usual impact macroeconomic indicators used as determinants of wellbeing. We obtain that lower sovereign ratings are associated with lower life satisfaction reported.

The main contribution of this chapter to the extant literature is the exploration of how changes in *sovereign ratings* affected people's wellbeing during the last recession. One hypothesis on the mechanism at work is that these changes have an impact on people's perceptions of their own country's economic outlook and the likelihood of recovery and that this, in turn, affects the perception they have of their own wellbeing. Our results are robust to several checks.

This chapter also highlights that more factors than the commonly used determinants of wellbeing have an impact on this indicator and should be considered when analysed. Significant differences across countries should also be taken into account, as well as geographic relativeness. We obtain that when neighbouring countries are doing well, individuals are more

likely to report higher levels of life satisfaction. Lastly, we observe that individuals recover somewhat their reported life satisfaction few years after the recession onset, while economic indicators were not yet improving. In line with existing research, we identify here an adaptation to harsh economic conditions; however, this analysis should be extended by including a longer follow-up period, when we would expect to see another decline in wellbeing, given the recession consequences a few years later in countries more affected.

Wellbeing is an important indicator in more fields, beyond macroeconomic assessments. In recent years, more countries have adopted a value-based decision making in health care resource allocation, based on improvement in quality of life new technologies deliver. In this particular context, it has been long analysed who the assessor should be, the patient and the control group, and what is the difference between their assessments. In the second chapter, we analyse quality of life assessments of a sample of patients with amputations. We are interested here in how different their evaluations are compared to hypothetical evaluations made by the general public, a group of controls matched by personal characteristics. Further, we look into how fast patients adapt and how they evaluate the quality of life of others with the same health status as themselves. Our results indicate that amputees adapt as soon as within the first two years. Further, amputees' evaluations of peers converge with their own over time; the longer the duration since amputation, the more patients report the same quality of life for themselves as for others with the same amputation. It has been shown that all individuals have a reference bias when assessing wellbeing or quality of life measures. Individuals' responses are affected by how they see themselves compared to others, either mentioned in the question asked, or, subconsciously, relative to others with the same characteristics as theirs. As the patients in this analysis report the same values for others as themselves, we interpret this finding as acknowledgement of adaptation.

The results obtained in this chapter highlight the importance of considering adaptation in health state valuations. We obtain that amputees adapted while the general public might not be able to account for adaptation and might be prone to focusing illusion. We also observe that over time amputees assign to peers similar QoL valuations to their own ones. We interpret this result as acknowledgement of adaptation and infer that it can easily be tested in patients with other conditions, where adaptation has also been proven. We also obtain that overall patients can predict their own quality of life; however, when we differentiate by cause of amputation, we observe that those with a medical-related amputation overestimate by a larger margin their future quality of life compared to those with an injury-related amputation. We infer this overestimation might be caused by patients expecting the amputation and thus foresing a fast recovery.

In the aftermath of the last recession, many governments have taken measures to mitigate its consequences. The welfare reform implemented in the UK comes into this context, however still in line of a long history of reforms to address the large government spending on state benefits. The third chapter analyses the effect of this reform on individuals directly affected, namely disabled individuals. We analyse the change in wellbeing of a sample of individuals in the context of the benefit reform started in the UK in 2013, based on data collected from the

Annual Population Survey and regional indicators. We implemented an instrumental variable estimation to account for endogeneity in measuring wellbeing in disabled individuals. For *self-assessed health*, a wellbeing measure included in the survey that is dichotomous, we implemented the same methodology as in the first chapter, partial proportional odds model. For the other four response variables, we implemented an ordinary least squares estimation when we analysed only the disabled individuals sample, and a two-stage least squares estimation when we implemented the instrumental variable.

We obtained that disabled individuals are worse off in terms of wellbeing after the onset of the reform, compared to non-disabled respondents. We further analysed the effects of the reform on those disabled receiving benefits and obtained a negative effect on their wellbeing, on all indicators analyses, and higher levels of anxiety. However, when analysing the impact of the reform on those affected by the PIP cap, we did not obtain significant results. Further research on a longer-follow-up period is necessary to confirm these latter findings.

Although not much research on this topic has been published yet, interviews with affected individuals highlight that they have been experiencing fear, insecurity, increased stress levels and even suicidal thoughts. Our analysis along recent research highlights the detrimental impact the welfare reforms had had so far on individuals' wellbeing.

This analysis emphasizes the effects of government policies on individual wellbeing. Although some statistics show that those receiving benefits may even receive higher amounts than prior to reform, people are feeling more anxious and worse off in terms of wellbeing. Most importantly, fewer individuals were confirmed eligible to receive benefits.

Moreover, the results of this chapter are interesting when associated with the first chapter's results. When analysing the impact of the recession, we observed that people might have adapted to the last recession, as shown by the positive estimates for *life satisfaction* over time, including in the UK; however, individuals affected directly by a government reform report lower levels of wellbeing after just a few years after the recession. While individuals might have recovered in terms of wellbeing following the recession, its consequences negatively impacted them again.

The dataset used in this chapter provides a unique opportunity to analyses more wellbeing measures, namely *life satisfaction*, *happiness*, *worthiness*, *anxiety* and *self-assessed health*. Amongst these indicators, we obtained stronger and consistently significant results on *life satisfaction*. Nonetheless, the impact the reform had on the indicators analysed is in the same direction, when statistically significant; respectively individuals report lower levels of *life satisfaction*, *happiness* and *worthiness*, and are less likely to report higher levels of *self-assessed health*. At the same time, they report higher levels of *anxiety*.

Few important findings emerge from this thesis. Firstly, I would like to highlight the importance of considering wellbeing as an indicator in macro assessments. We contribute to the extensive literature on the topic by analysing its determinants and dynamics of wellbeing in difference context and how people respond to external shocks. We also highlight that although there is some debate on the relationship between income, a well-established determinant, and

individual wellbeing over the long run, it has been shown that people are concerned about stability, growth and likelihood of recovery. Also, we have shown that there are significant differences in wellbeing threshold and generalisations about the size of impact control variable we include have on wellbeing should not be made.

Our findings, across the three chapters, show that people are affected by external shocks, and even though they adapt and cope with difficult situations, new events declines their wellbeing even if they just adapted to recent events.

Overall, we find a decline in individual wellbeing in countries were sovereign ratings indicate economic downturn and in individuals affected by government reforms. We recognise that government reforms are necessary, but we consider that given the impact these have on individual wellbeing, government can improve the way these policies are implemented. We also found that patients not only adapt to their condition, in this case an amputation, but also, they acknowledge it. We can hypothesise here that decision making in health care resource allocation can be bases on patients' assessment, as long as adaptation is accounted for.

This thesis also made a contribution on methodology. We believe that partial proportional odds model should be more commonly considered when dichotomous variables are analysed. More often than not, it has been shown that control variables have a different impact across the categories of wellbeing indicators, and we consider essential for researchers to account for this variation.

There are several limitations to our analyses that need to be acknowledged. Firstly, we have used cross-sectional datasets in the first and third chapters; more often these are the data available over longer periods of time. However, cross-sectional datasets have limitations compared to a panel series. Secondly, we have used a very small sample in the second chapter. Although our results are confirmed by the literature, it would be beneficial to confirm our main findings (patients acknowledge adaptation) on a larger sample. Specifically, this analysis could benefit of an extended study to determine an adaptation function that can then be easily implemented in quality of life assessments. Also, it would be beneficial to perform the analysis in the third chapter on more APS waves to provide a longer follow-up period and observe dynamics in the wellbeing of affected individuals after the reform was implemented across the country. Given the results obtained in the first two chapters, we are expecting to see increased wellbeing reported in the aftermath of the reform, as an evidence of people's adaptation to external shocks. Endogeneity is a common concern across all three chapters; although we have attempted to correct for this issue and conducted several robustness checks, uncertainty on this topic remains. More specific limitations to each chapter are discussed in the respective sections.

On a personal note, I would prefer to consider that the overall conclusion of my thesis is that individuals are affected by external factors, and while hedonic adaptation helps them to cope and rebound from external shocks, this should not be an excuse for politicians to take actions without considering how these affects people.